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Textile World

FEBRUARY, 1938

DOUGLAS G. WOOLF, *Editor*

Yes, It *Is* Two Other Fellows!

THE textile industry is suffering from a case of mistaken identity. It has heard so many analyses of "industry" in the abstract that it has overlooked the fact that sometimes the analysts are talking about two other fellows.

One of the main causes of confusion just now is the impression in Washington that the technique of price-making is the same in *all* industry. We have encountered that viewpoint repeatedly at recent Congressional hearings. A Senator will ask a representative of the cotton goods industry whether a general reduction of prices all along the line might not increase consumption and lead to greater employment. The witness will reply patiently that the cotton goods market is an open one and that such determinative policies do not represent the way things are done.

Here, this writer must make himself clear, in order that he may not be guilty of causing the confusion he is criticizing. He is not—and cannot—talk of the textile industry as a whole—any more than one can talk of industry as a whole. The situations in print cloths and in rayon yarns—to take two examples—are as strikingly contrasted as one could imagine. It is a market of the type of the former that we are discussing—because it is that type which is responsible for most of the textile grief.

Anyone who has followed the startling degeneration of manufacturing margins in staple cotton fabrics during the last six months knows how absurd it is to suggest a reduction in prices as a stimulus to re-employment in that field.

•

Similar confusion exists with regard to wage policies, as we pointed out last month. There are undoubtedly certain industries—particularly in the construction field—where a reduction in hourly wages would stimulate activity and eventually increase the annual earnings of the individual employee, thereby adding to the general purchasing power. On the other hand, a 10% or a 12½% wage cut in an industry such as cotton goods manufacture would not only be ineffective as a stimulus to greater consumption, but actually would paralyze buying still more by re-injecting wage cutting as a competitive weapon and thereby destroying any semblance of stability. That is why we regret so deeply the move in that direction in certain parts of New England. We believe the best interests of the textile industry would be served by the restoration of such cuts as have been made, and by the abandonment of that method as "a way out."

•

Finally, utter confusion exists as to the bearing of the anti-trust laws upon industry. Certain individuals in the Government are calling for a tightening of those laws to check monopoly. Those are just meaningless words when it comes to an industry such as cotton goods—again using that as an example of the openly competitive branches of textile manufacture. What is needed here is revision of those laws so that wage and price chiseling, lengthening of workweek, and other substandard practices are recognized for what they are: acts in restraint of trade.

The net of all this is apparent: The existence of these specialized problems in a decentralized industry such as textiles is a commanding reason for the rehabilitation and vigorous advancement of programs such as those which have made textile cooperation a high-light during the last decade. We believe it fair to say that such programs are at a low ebb in most branches of this industry right now. We think it safe to state at the same time that they were never needed more urgently than they are right now.

Textile association officers and executives please take note.

Farm Bill et al

Quota plan includes cotton—All quiet on wage-hour front

By BLAINE STUBBLEFIELD
Washington Correspondent, TEXTILE WORLD

Farm bill all set, based on market quota and covering cotton as well as other crops . . . Wage-hour legislation waits on President . . . Tax revision seems sure . . . Administration can't give comfort to anti-boycott condition.

IN HIS conferences with business leaders President Roosevelt is seeking clues for White House action that will banish the current slump without sacrifice of his reform program. He may be forced to concede much ground to business. But business representatives in Washington feel that concessions should be made on a long-term basis because they have learned to fear his frequent and sudden tactical changes.

A bright ray of sunlight is shining through the clouds. Most business men here, and most Administration leaders, still believe there is no long-drawn depression ahead. Economists now figure state-of-mind their biggest factor.

Farm Law May Cover '38 Planting

Out of the House Jones bill and the Senate Pope-McGill bill, the conference committee has hammered a draft that brings wheat, corn, tobacco and cotton under quota this year—rice next year. In all reasonable certainty it will become law this session, perhaps very soon.

A national market quota, derived from a production-consumption formula, to be declared each year by the Secretary of Agriculture after approval of two-thirds of farmers by referendum, is the framework of the proposed law.

This is the cotton formula: Normal domestic consumption, plus exports, plus 35% of the sum of those two, equals normal supply. When actual supply exceeds this normal by 10%, then the Secretary declares the market quota in effect. The calculated supply level at which the quota will be applied is 19,500,000 bales reached when crop forecast is 15,000,000 bales.

But the law would not apply to this year's cotton crop, because of the tremendous over-production of last year; a more drastic limitation would be imposed. The Secretary would declare that the United States can grow only 10 or 11 million bales.

Getting back to the law, if enacted, this is how it will work: The Secretary will invoke the quota when he sees that free and unlimited production would force supply over the 19,500,000 bales. Then he will apportion the quota in bales among the cotton-growing States. The State committees will then translate bales into acres for the counties, and county committees will tell each farmer how many acres he can plant.

Then the farmer can sell all the cotton he can grow on his allotted acres. There is no restriction as to the *amount* of cotton. But if he sells any cotton grown on any additional or other acres, he will be subject to three different penalties: (1) he must pay a tax of 2c a pound on the additional-acreage cotton, $10 a bale—a prohibitive tax; (2) he will not get his soil conservation or parity payments; (3) he will lose his cotton loan privileges.

Agriculture experts say the translation of bales to acre quotas is pretty smart. The farmer will naturally fertilize his land and do everything possible to get maximum production. But increased production will result in cutting down his acreage the next year. Result: the farmer will have just as much cotton to sell, and the Government will achieve its objective of resting soil or turning it to soil-building crops.

There will be no parity payments, says the conference committee, unless Congress votes a processing or other tax for funds. The committee is not asking for taxes, and Congress is most unlikely to initiate a tax on business as it stands now. (By parity payment is meant a sum which, added by the Government to the market price of cotton at any time, would make a bale of cotton buy the same amount of goods in a store as it bought in 1909 to 1914.)

Soil conservation payments will go on as they have done under the old adjustment act, but the total will be no more than the $500,000,000 which the President has in his budget for that purpose.

Thus, as TEXTILE WORLD has predicted, a fairly conservative law, relatively within the bounds of the budget, seems about to be enacted. What it really amounts to is simply the old conservation act with a market quota provision added for enforcement.

Quiet on Wage-Hour Front

The drive for labor standards legislation is off while the President wrestles with the business decline. It waits on him because he and his Administration are its only active sponsors. Organized labor talks for the bill but doesn't act. The mass of unorganized workers, the lower third for whom the President wants better pay, is inarticulate. Big business is against it in principle. Little business is against the 40 cents-per-hour pay. Agriculture, which was to be exempt, gave it the cold shoulder, fearing similar demands from farm labor. Recently the wage-hour threat has been cited as one of several obstructions to business recovery.

Congress Will Ease Taxes

Congressmen hate to tamper with taxes in election year. But poor business conditions will force action. And the vote-threat will temper legislation. Undistributed profits and capital gains taxes will be modified to promote capital expansion and concessions will be made to debt-ridden companies. Present revenue, or even more, will be obtained by increasing normal corporation taxes. Retail interests will buck spreading the base of the income tax (thereby cutting down purchasing power) and so will the voters. House debate will be long and painstaking. Unless business improves, the Senate will further ease up on corporations when it re-writes the bill. Controversy will drag into late spring or summer.

Neutrality on Raw Silk

Anything President Roosevelt or one of his administrators might say against the silk boycott would be taken as aid and comfort by Japan. Thus the Government will have to abstain from a friendly nod for a timely agreement between CIO, AFL, and silk manufacturers.

Telling the Government . . .

Textile representatives heard by Senate Unemployment Committee

A CLEAR picture of the dramatic shift in textile fortunes during 1937, and of the principal needs of the situation at present, was presented last month to the Senate Committee on Unemployment and Relief by representatives of the industry. Those heard included Dr. C. T. Murchison, president of the Cotton-Textile Institute, Robert E. Henry, president of the American Cotton Manufacturers Association, and Russell T. Fisher, president of the National Association of Cotton Manufacturers.

To Do and Not to Do

The events of the last four years reveal with clarity what should be done and what should be left undone, declared Dr. Murchison: (1) Processing tax should be avoided. (2) Undistributed profits tax should be repealed or revised. (3) Bureaucratic control, such as loosely stated wage-hour policies administered according to the discretionary dicta of a Labor Standards Board or a National Labor Relations Board, should be avoided. (4) Many of the evils of our competitive system could be overcome by the voluntary efforts of industry if cooperative action were possible under the anti-trust laws.

"Industry cannot be stripped of its traditional rights and privileges without likewise stripping it of its responsibilities," concluded Dr. Murchison. "If we are to preserve as a living progressive entity the American system of free enterprise, we must adopt a national program predicated not upon the diminishing responsibility of business, but upon a continually expanding responsibility."

Speaks for the South

Reporting that the southern cotton textile industry was operating currently (Jan. 10) at 35% of capacity, Mr. Henry predicted continued reduced operations until such time as present inventories or stocks of cotton textiles are liquidated or consumed.

He made these recommendations: (1) A processing tax would retard recovery in this industry. (2) It would be helpful to have a reasonable restriction upon the rising tide of jute imports in accordance with any proposed restriction in the cotton acreage. (3) It would be helpful to employment in cotton mills to restrict the importation of cotton textiles and thus preserve jobs for employees of American mills. (4) The undistributed profits tax should be modified or repealed.

Dr. C. T. Murchison, president of Cotton-Textile Institute

Robert E. Henry, president, American Cotton Manufacturers Association

Russell T. Fisher, president of National Association of Cotton Manufacturers

These Textile men appeared before Senate Committee on Unemployment and Relief.

And for New England

A flash picture of employment in New England cotton mills during the first week of 1938 as against the corresponding week in 1937 was given to the committee by Mr. Fisher. These data were based on a quick survey of his member mills, the response to which was 100%. The fact that such complete information on the first week of the year was available and made public on Jan. 10 was in itself remarkable.

The report showed that in the first week of January last year there were 113,956 employees on payroll, and for the same period in 1938 there were 76,663, a decrease of 39,658 employees, or 35%. More serious however is the fact that the 76,663 employees on payroll during the first week of this year were working an average of only 20 hours per week.

As to the method of putting some of these unemployed back to work, Mr. Fisher pointed out that, because of the broad nature of the distribution of cotton goods, its future is directly dependent upon other industry, upon agriculture, and upon the purchasing power of the general public.

To Aid Durable Goods

The most important thing to accomplish now is to get the durable goods industry going full blast at the earliest possible moment, declared S. R. Fuller, Jr., president of the North American Rayon Corp., in a letter filed with the committee and read into the record by Senator Byrnes, chairman. To that end, the following steps were proposed by Mr. Fuller: (1) Amendment of the undistributed profits tax. (2) A home building program. (3) A substantial increase of the present appropriation for national defense, "providing, of course, such increase is necessary."

It will be noted, from this and other dispatches coming out of Washington and elsewhere, that the attitude of business toward the undistributed profits tax is practically unanimous.

World Textiles . . .

A behind-the-scenes viewpoint from one who has been active internationally

By ROBERT R. WEST
President, Riverside & Dan River Cotton Mills

***There is something about the idea of a world conference which is usually too much for the average practical-minded textile manufacturer. He has an urge to know what it is all about but he feels possibly overawed by the cosmic import of it all . . . And yet he really ought to know about them—particularly when, as was true in 1937, there was not only a world textile conference in this country in April but a general world conference in Geneva in June. Fortunately for our readers, Mr. West was active behind the scenes in both—as a textile delegate at Washington and a United States delegate at Geneva. In this article, written for TEXTILE WORLD, he gives a broad picture of what it was all about.*—Editor**

SINCE 1919 the International Labor Organization has been giving consistent and brilliant study to the many aspects of industrial relations. Its work culminates in resolutions, recommendations or conventions adopted at its annual conference. This conference represents the conduct of industrial relations in the grand manner. It aims to define industrial practice in a way suitable to be incorporated into statute law of countries which are prepared to adopt the proposals.

The composition of the Conference reflects the interests of government, workers, and employers of each country, and the representation of these interests is highly professionalized. The employers form a group which is composed largely of trade association executives. The members of the workers' group are almost exclusively trade union leaders from their respective countries. Each member state is entitled to two government delegates, who are usually attached to the ministry of labor of their country.

A careful voting balance is kept between these three groups, each country having two votes for the government, one for the employer, and one for the worker delegate. If, by chance, a country has sent a worker delegate but not an employer delegate, the workers' delegate is disfranchised in the voting, but not in the speaking. The same holds true if an employer delegate is sent but not a workers'. When committee appointments get out of balance, plural voting is provided to restore the balance.

Committees do the work of hammering out the proposals. The conference listens to many speeches, superbly interpreted, and votes on the recommendations sent up by the committees. Behind this facade, which is set up annually, goes on the work of a permanent International Labor Organization, the brilliant personnel of which is continually studying and preparing reports on economic and social aspects of industrial conditions the world over.

World Textile Report

A fair sample of its work is a report published in 1937, entitled "The World Textile Industry—Economic and Social Problems". This report was prepared to supply factual information for the World Textile Conference held in Washington in April, 1937. It should be conscientiously studied by every textile executive. Behind its array of statistics, charts, tables and analyses, the habits and characteristics of the textile industry throughout the world are in fairly clear outline.

The work on this report was the result of a resolution adopted at the International Labor Conference of 1936, and the report itself formed the basis of discussion at the Washington Conference, which led to the final consideration of the 40-hour week convention for textiles which was adopted at the conference held in Geneva in June, 1937. The publication of this report and the fact that the World Textile Conference was held in Washington brought the textile industry of the United States for the first time into direct contact with the work of the International Labor Organization.

Participation in a conference of the I. L. O. is an illuminating experience, particularly for a textile manufacturer from the United States. In some respects the experience is deflationary, so to speak. A few illustrations may justify the use of this word deflationary. In the first place, we in the United States are accustomed to worship without reserve at the feet of technological perfection, and take no little pride in the accomplishments resulting from that worship. Rationalization—so it is called in Geneva—is subjected there to a much more critical scrutiny than we are apt to give it, and embarrassing questions are asked as to its effect on employment, production, and overall cost. Sometimes it proves difficult to think up the proper answers to these questions on the spur of the moment, and things do happen quickly when debate gets under way.

Of course, it is very disturbing to have our firmly grounded belief in technological advance questioned in any way.

Another puncture comes from the

Robert R. West, author of this article, snapped informally

polite but none the less pointed suggestion that textile manufacturing in the United States of America is after all something of a sinecure when compared with the conditions surrounding it in some other countries. This feeling comes from the fact that the textile business in the United States is conducted in "the greatest free trade area in the world"—securely sheltered by tariff protection.

Competition in such a domestic market is regarded as somewhat amateurish when compared with the necessities of international competition. The feeling prevails that American textile manufacturers are not down to the bedrock of competitive necessity—we are sort of shadow boxing instead of being in the heavyweight championships. So when we expound the virtues of the 40-hour week as practiced in the United States, the reception is much the same as we are apt to accord the declamation of a precocious high school boy upon the occasion of an oratorical effort.

Another point is of interest. Our pride in the relatively high wage scale we pay is apt to be diminished by the continental equivalent of "So what?" Weavers in Holland, for instance, receive about the same number of guilders per week as our weavers receive dollars. A guilder is worth about one-half dollar in exchange, but apparently worth considerably more in buying food, clothing, and shelter. Guilders are spent a little differently too. Cotton mills in Holland provide parking space for bicycles rather than for automobiles, and week-end excursions consume little gas but provide plenty of exercise. It is also alleged that the burden of installment paying is less in the case of a bicycle than in the case of an automobile.

The young lady in a Japanese textile mill who divides her time between caring for spindles and learning the amenities of home life for a few yen per week, goes back to her rural home after a few years with a sufficient dowry to satisfy her requirements. In the meantime, she has contributed her share toward providing her country with the wherewithal to trade for much needed commodities.

Labor Support First Essential

Inasmuch as the relationships at the conference between management and labor are conducted after the European rather than the American model, it is necessary for a textile manufacturer from the United States to reorient himself somewhat. The work of the Conference proceeds upon the theory that any of its proposals must have the avowed support of labor. If management can see its way clear to give its help, so much the better, but the sine qua non is labor support. This establishes the direction of action.

For instance, the proposal of the 40-hour week following the adoption of a 48-hour week convention, and the continued effort to raise the lower age limit of employment. It happens that with a few significant exceptions, conditions of employment in the United States are such that they would be little affected by the adoption of proposals which have been made thus far by the International Labor Conference. This fact undoubtedly contributes to the feeling that the work of the Conference and the International Labor Organization seems remote to the textile manufacturers of the United States.

In spite of these factors which tended to put participation on the part of United States textiles on the loose pulley, an active part was taken at the 1937 Conference in endorsing the proposal of a 40-hour week for textile manufacturing. Argument ran to the effect that such hours were almost universally observed in the textile industry of the United States and had been for approximately four years; that an opportunity had been given at the time of the invalidation of the N.R.A. to abandon that standard, but that it had been adhered to by the industry with a singular unanimity, and that American textile manufacturers felt that the 8-hour day and 40-hour week, under normal circumstances, represents a desirable operating procedure.

Dealing as it does with problems not yet recognized as being within our orbit (the United States of America has as yet adopted no I.L.O. convention), there seems to be little to stir our interest in the work of this organization. Some day, however, the American textile manufacturer will of necessity come to grips with international competition in textiles and this alone will persuade him to participate actively in affairs of the I.L.O.

At the present time our government is undertaking the formulation of reciprocal trade treaties designed to facilitate the flow of international trade. The success of these treaties will depend upon the degree to which tariffs, quotas, and similar devices can be adjusted to permit a freer interchange of goods. As long as standards of production in various countries continue to be as unequal as they are at present, it is difficult to see how tariff or quota adjustments can be made without seriously disturbing employment and the trade conditions within certain countries.

The consummation of trade agreements, the type of which are now being actively negotiated by our government, cannot fail to lead textile manufacturers head on into international competition. Such being the case, efforts to establish agreeable standards of production will become of intense interest to us. It is to such efforts that the I.L.O. devotes its time and remarkable abilities.

Next Issue: *The "Annual"*

TEXTILE WORLD'S *Annual Review and Forecast Number has become a textile institution. Each year it enables the industry to take stock.*

This year, it takes on added significance because of the timeliness of its special theme: **textile industrial relations.** *In the section devoted to that subject, the story of employer-employee relationships will be told positively, accurately and graphically. A series of cross-sectional articles will take up the major phases of this theme—and supplementing these will be a group of individual company stories typical of the industry as a whole.*

In addition, the Annual Review and Forecast Section will tell the story of textile progress—both economical and technical—in 1937, and indicate the trends for 1938.

The "Annual," with these two all-important sections, will appear on February 28.—EDITOR.

The Case of Mary Jones

or . . . How Berkshire Knitting Mills saves through modern payroll accounting

By ELMER I. CAMPBELL
Research Department, TEXTILE WORLD

THE CASE OF Mary Jones of the Berkshire Knitting Mills is an interesting one. Mary works in the topping department, punches No. 805 on the time clock. At home in her bureau drawer she has a card bearing Social Security Act Account No. 082-01-6669. Mary earned $26.75 during the week ending Dec. 11, 1937. Mill deductions for various items amounted to 50c. that week and the Federal government took 27c. out of her pay for her old-age retirement fund. This left Mary with $25.98, and she signed a receipt for that amount in exchange for her pay envelope.

"And that," she might have thought as she counted her week's pay, "is that."

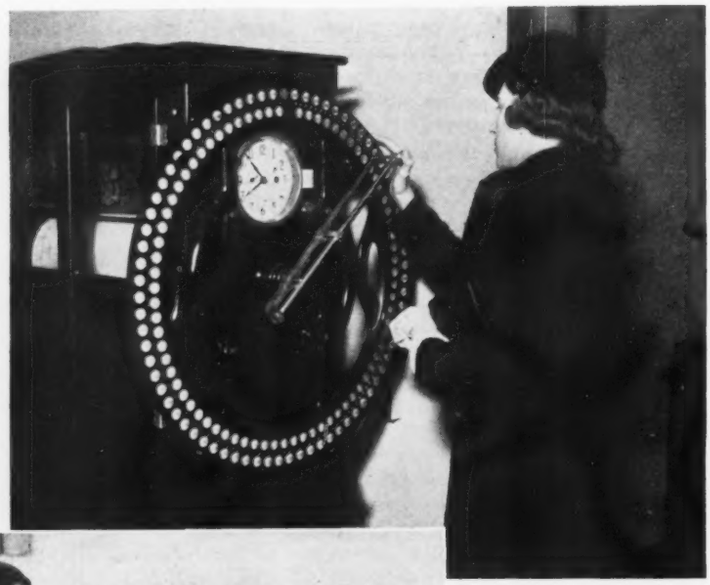
But Mary's was only one of 6,000 pay envelopes which the Berkshire's management had in mind when it began to investigate modern payroll accounting methods—methods which would reduce the increased clerical cost of payroll work occasioned by the Social Security Act without sacrificing speed and accuracy, both important to good employer-employee relations. They found a satisfactory solution to their problem in a modern accounting system, enabling them to pay their 6,000 employees weekly.

Let's follow Mary Jones' pay envelope from the beginning to the end of one payroll period.

First of all, her time card (Fig. 1) is prepared on an addressing machine from a stencil bearing her name and clock number. At the end of the week her time is computed and entered on the card along with her rate of pay, gross pay for the week, old-age-pension deduction, and mill deductions. The time card now contains all the information needed for the preparation of Mary's pay envelope, pay receipt, individual earnings record, and the payroll sheet.

The information on the time card is now ready to be transferred to four other forms. Berkshire's problem was to do this job economically.

The master record is the payroll sheet (Fig. 2), a form measuring 12x16¼ in. with room for complete records of 50 employees on each sheet. When completed, these sheets are bound in ledgers to become permanent payroll records of the Berkshire Knitting Mills.



Mary Jones punches No. 805 on the time clock

A trained accounting-machine operator in Berkshire's payroll department averages 150 entries per hour

In preparing the master payroll sheet the operator places it in the accounting machine and types in the date and department name. Entries are made for employees using Nos. 801 to 804. Now on the top of the group of time cards from the topping department is that of Mary Jones. From a posting tray beside his desk, the accounting machine operator selects Mary's earnings-record sheet (Fig. 3), a buff-colored form measuring 10¼x12 in., which carries Mary's clock number, social security number, and a complete record of her gross earnings, deductions, net pay, and hours for every week of the year to date. Space is provided on this form for a 52-week's earnings record.

This form is placed in the accounting machine on top of the master payroll record. On top of that, the operator places a blank pay envelope with a self-contained receipt (Fig. 4). Now he is ready to transcribe the information from the time card and thus compute the entire departmental payroll.

First, he types in Mary's clock number. This, like all remaining entries, is written simultaneously, through the use of carbon paper or spot carbon, on all four forms; namely, the pay envelope, pay receipt, employee's earn-

ings record, and payroll sheet. When the clock number is typed, the machine automatically selects the next column, where Mary's name is typed. Then it selects the next, where her gross earnings are entered. At this point the accounting mechanism of the machine goes to work and the $26.75 is entered in the cross-footer, a device handling horizontal computations.

In the next two columns Mary's old-age pension and mill deductions are entered and automatically subtracted from her gross earnings. The amount now appearing in the cross-footer, $25.98, is Mary's net pay and is entered in the next column. This entry "clears" the cross-footer, leaving it ready to compute the pay of the next employee.

In the last column the hours worked during the week are entered.

As each item is entered in the five columns to the right of the name column, the various amounts are added into five separate registers which, when the sheet is completed, will show the totals for each column.

Mary's entry having been completed, the machine returns automatically to the first position at the left of the form and the operator removes Mary's pay envelope and her earnings record. The pay envelope and the attached receipt now bear all the information which appears on the earnings record and on the mill's master payroll sheet. Moreover, Mary's earnings record is now up-to-date and shows all her gross and net earnings and deductions for the year thus far.

The earnings record is replaced in the posting tray, the pay envelope is ready to go to the cashier to be filled, the receipt to Mary for signing; and the accounting machine operator is ready for the entry of the earnings and deductions of employee No. 806.

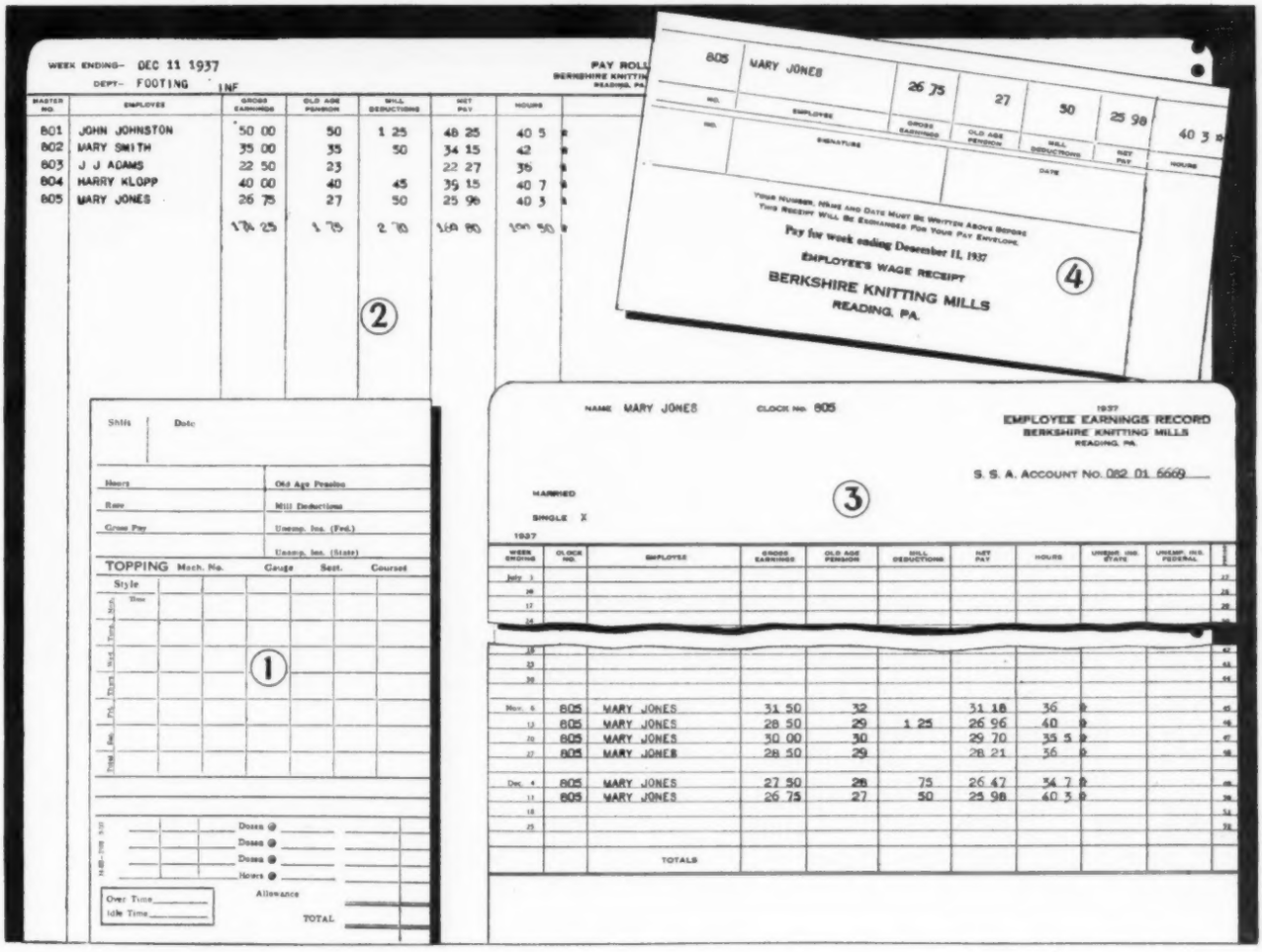
When the fiftieth employee's earnings have been entered, the pay roll sheet is removed from the machine and Sheet No. 2 inserted. At the bottom of the columns carrying dollar amounts, sub-totals accumulated in the various registers are entered and carried forward to the top of Sheet No. 2. When the payroll is completed, the grand totals are entered at the bottom of the respective columns on the last payroll sheet; these do not appear on any other form, as the last employee's earnings record and pay envelope are removed from the machine before these entries are made. This last operation automatically "clears" the adding registers, leaving the machine ready for its next accounting job.

Does this sound like a long, complicated process? Then watch a trained accounting-machine operator in Berkshire's payroll department as he averages 150 entries per hour. Indeed, two operators, working at two machines, complete Berkshire's payroll work in less than twenty hours.

This is possible because the modern accounting machine, like every modern scientifically-engineered machine, includes everything to facilitate speed. For instance, a special stop eliminates the necessity of aligning forms, a carbon-backed receipt and roll carbons mounted on holders on the machine eliminate the need for "juggling" carbon paper, and electric controls actuate the movement of the machine whenever possible.

The case of Mary Jones is an interesting one. It shows how Berkshire Knitting Mills has been able to effect a worth-while saving through modernization of payroll accounting.

Fig. 1. Time card on which Mary's pay is computed. Fig. 2. Payroll sheet with room for complete records of 50 employees. Fig. 3. Mary's earnings record sheet for year. Mary started to work at the Berkshire plant on Nov. 1, 1937. Fig. 4. Mary's pay envelope for week ending Dec. 11, 1937


WEEK ENDING– DEC 11 1937
DEPT– FOOTING INF
PAY ROLL
BERKSHIRE KNITTING
READING, PA.
MASTER NO.
EMPLOYEE
GROSS EARNINGS
OLD AGE PENSION
MILL DEDUCTIONS
NET PAY
HOURS
801 JOHN JOHNSTON 50 00 50 1 25 48 25 40 5
802 MARY SMITH 35 00 35 50 34 15 42
803 J J ADAMS 22 50 23 22 27 36
804 HARRY KLOPP 40 00 40 45 35 15 40 7
805 MARY JONES 26 75 27 50 25 98 40 3
174 25 1 75 2 70 169 80 100 50
2
805 MARY JONES 26 75 27 50 25 98 40 3
NO. EMPLOYEE GROSS EARNINGS OLD AGE PENSION MILL DEDUCTIONS NET PAY HOURS
SIGNATURE DATE
YOUR NUMBER, NAME AND DATE MUST BE WRITTEN ABOVE BEFORE THIS RECEIPT WILL BE EXCHANGED FOR YOUR PAY ENVELOPE.
Pay for week ending December 11, 1937
EMPLOYEE'S WAGE RECEIPT
BERKSHIRE KNITTING MILLS
READING, PA.
4
Shift Date
Hours Old Age Pension
Rate Mill Deductions
Gross Pay Unemp. Ins. (Fed.)
Unemp. Ins. (State)
TOPPING Mach. No. Gauge Sent. Coursed
Style
Time
1
Doffs @
Doffs @
Doffs @
Hours @
Over Time
Idle Time
Allowance
TOTAL
NAME MARY JONES CLOCK No. 805
1937
EMPLOYEE EARNINGS RECORD
BERKSHIRE KNITTING MILLS
READING, PA.
S. S. A. ACCOUNT No. 082 01 6669
MARRIED
SINGLE X
3
1937
WEEK ENDING CLOCK NO. EMPLOYEE GROSS EARNINGS OLD AGE PENSION MILL DEDUCTIONS NET PAY HOURS UNEMP. INS. STATE UNEMP. INS. FEDERAL
July 3
10
17
24
31
Aug. 7
14
21
28
Sept. 4
11
18
25
Oct. 2
9
16
23
30
Nov. 6 805 MARY JONES 31 50 32 31 18 36
13 805 MARY JONES 28 50 29 1 25 26 96 40
20 805 MARY JONES 30 00 30 29 70 35 5
27 805 MARY JONES 28 50 29 28 21 36
Dec. 4 805 MARY JONES 27 50 28 75 26 47 34 7
11 805 MARY JONES 26 75 27 50 25 98 40 3
18
25
TOTALS

Proper Lickerin Operation

Is of primary importance in production of strong, even cotton yarn

By A. K. LANDAU
Saco-Lowell Shops

CONDITIONS prevailing in lickerin assembly have a definite effect on the character, strength, and appearance of cotton yarn production. The actual functions of lickerins, and their need for perfection as regards mechanical details, do not seem to be regarded so seriously as they should be by card room overseers. Taken in the true estimate of its importance, work performed by lickerins may be considered as a separate process intervening between picking and carding, because, if lickerins fail to perform efficiently and correctly, the carding action, between cylinder and flats, will be defective: the web will be replete with neps, broken fibers, and wasty stock; the cotton will be damaged beyond repair, and the yarn will be weak, uneven, and generally of unsatisfactory character.

From a mechanical standpoint, lickerins must be straight and in balance; they should be equipped with good bearings and tight gudgeons; and be covered with wire that is sharp and free from hooks, broken teeth, and dull, rounded edges. They must be operated at proper speeds, set the correct distance from the feed plate, and be provided with auxiliary assemblies (mote knives and screens) which are mechanically correct and in good maintenance. Fig. 1 shows a section through the lickerin assembly of a modern card; Fig. 2 a lickerin gage.

Saw-Tooth Wire Used

In best American practice, lickerins are covered with point-hardened saw-tooth wire, generally with eight grooves to the inch, set into the cast-iron lickerin cylinder in spiral form, and retained in grooves cut in the surface of the cylinder. The spiral form is adopted for two reasons: first, it assures uniform treatment of laps, since each tooth of the lickerin, successively coming into action, strikes the fringe of cotton over the nose of the feed plate, in a slightly different position, in order and progression; and, second, it makes the wire easier to apply in a continuous strip. On comparing

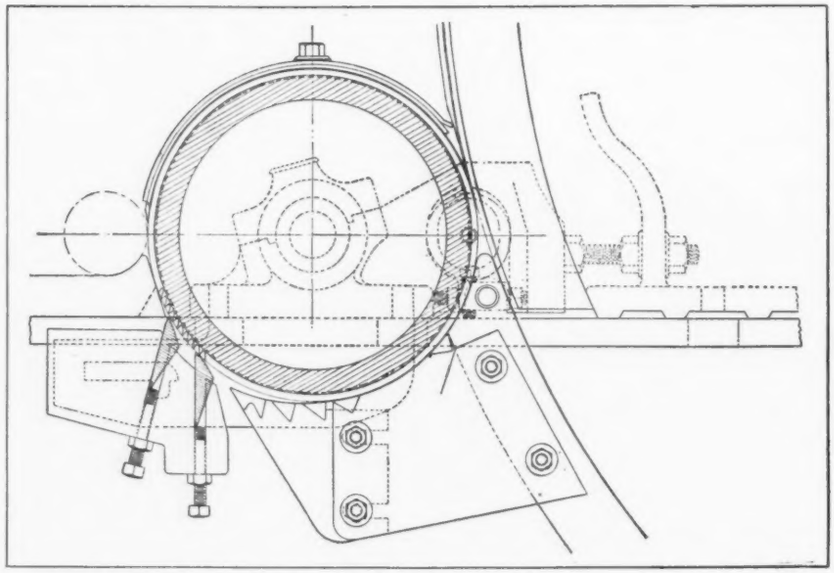


Fig. 1. Section through the lickerin assembly on a modern card

action of the mechanisms which precede lickerins with that taking place at this point, one immediately observes a striking difference. While the several previous cleaning operations have been of the beating or striking type, there is now an action which resembles combing. A lickerin with an average speed of 450 r.p.m. will have a surface speed of 12,723 in. per min. With standard lickerin wire, applied in a 1-in. pitch, there will be 24 points per sq. in. on the surface of the lickerin. Assuming a card is producing 10 lb. per hr., with 6% waste, from a 13-oz. lap, the feed roll will deliver 7.85 in. per min.

Under the above conditions 407,142 lickerin teeth per minute pass a given point on the nose of the feed plate. Therefore, for every inch of lap delivered by the feed roll there are 51,865 penetrations by the lickerin teeth. Since there are 904 points on a 1-in. wide strip around the lickerin, each tooth effects 573 fiber detachments while the feed roll is delivering 1-in. of lap. Thus, it can readily be seen that any imperfection directly traceable to defects in the contour or condition of the lickerin wire is multiplied to a dangerous extent.

As cotton is fed over the nose of the feed plate, it enters a wedge-shaped space formed by the circle of the lickerin wire and the smooth side of the feed plate. Here it meets the lickerin teeth, which, striking downward, force the cotton into this wedge-shaped space where, at the lower edge, it forms a thin fringe, as shown in Fig. 3. Cotton in this fringe lies in every conceivable direction—criss-crossed, tangled, and without any order. Some of the fibers are lying in a mass parallel to the edge of the feed plate—horizontally—and these will be taken off first by the lickerin. The others, before detaching, will receive a certain amount of straightening and combing while being retained by the feed roll and inter-fiber friction. Those which are more or less at right angles to the feed roll will be held longest and receive most combing.

Poor Stock Removed

While this is going on, other actions are taking place simultaneously. Shorter fibers are being removed and heavy impurities being struck off, to find their way through the mote knives. Short, wasty, and poorly developed fiber is carried off by the combined action of centrifugal force

and lack of cohesion between it and the fully-developed stock. This accounts for the general character of lickerin fly.

Settings Important

Successful accomplishment of the lickerin's purposes, aside from having the lickerin itself in proper condition, depends to a great extent on the setting of feed plates to lickerins. Regarding this detail, there is a great divergence of opinion, even among competent carders. Settings most common vary from 0.01 to 0.012 in. Good results have been obtained with settings as open as 0.017 in.; however, this is unusual. Differences in settings are caused by local conditions, which will vary, normally, from mill to mill. Rate of feed, weight of lap, speed of the lickerin, kind and character of cotton, all are important details which must be considered.

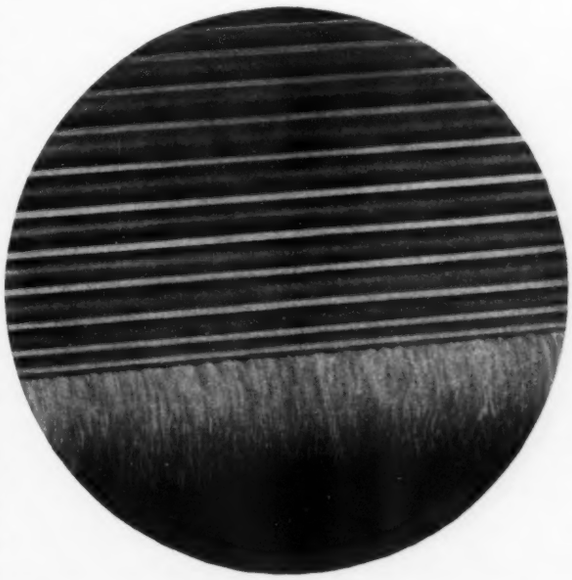
Results of various settings under dissimilar conditions can best be studied by loosening the feed-plate fastenings and moving it back without disturbing the fringe. This will expose the fringe just as it is being subjected to the action of the lickerin. Then, with a smooth steel rule the fringe should be pressed down until it occupies its normal position, and its thickness at its lower end, as well as its general appearance, studied. If the fringe appears to be too long, it may be advisable to lengthen the draft. If it is ragged, uneven, or broken off close to the nose, it is probable that a wider setting is called for. Several trials, with careful observation of the fringe and the character of the lickerin fly, will generally indicate the proper setting.

Lickerin-wire points are hard, with a tough, strong base, and damage to the teeth occurs only by accident. A common cause of such accidents is the presence of foreign substances in the lap—travelers; small pieces of leather; small, tough lumps of unopened cotton; and other substances of similar nature. Since breakage is almost impossible, due to the material of which lickerin wire is made, teeth bend over sideways, or lose their points, thus leaving a blunt or dull, inactive surface, which rubs and tears the cotton with which it comes in contact. The result of a condition like this is readily apparent in the droppings, in bent or broken mote knives, or in damaged screens. The only remedy for a lickerin in this condition is reclothing by competent mechanics, using good equipment, as this is a precision job. Lickerins should never be "stoned" or sharpened; attempts to do this will cause serious damage and ruin cotton processed on equipment so treated.

Oil or grease on lickerin surfaces will also result in poor work; it causes oil-soaked cotton to become impacted in the teeth, and is a frequent source of neps.

We have heard a carder of experience say that with a good lickerin he can make passable work with worn-out flats and cylinder clothing; that if a mill had but a limited amount of money to spend on card maintenance, good lickerins, accurate mote knives, and sound lickerin screens should receive first attention.

Fig. 3. The fringe of cotton should be examined frequently. Rough and ragged edges, or thin spots, indicate serious faults



Smooth Operation Necessary

In these days of long draft, conservation of the favorable characteristics of cotton is of great importance. Preservation of long, strength-giving fibers can be successful only when lickerins detach them smoothly, evenly, and without bruising or injury. These facts are becoming recognized more and more by mills making a commercial success of the short spinning methods, especially where break and evenness are of importance. As old carders used to say, "vigilance is the price of good carding; a good lickerin is the beginning of good carding."

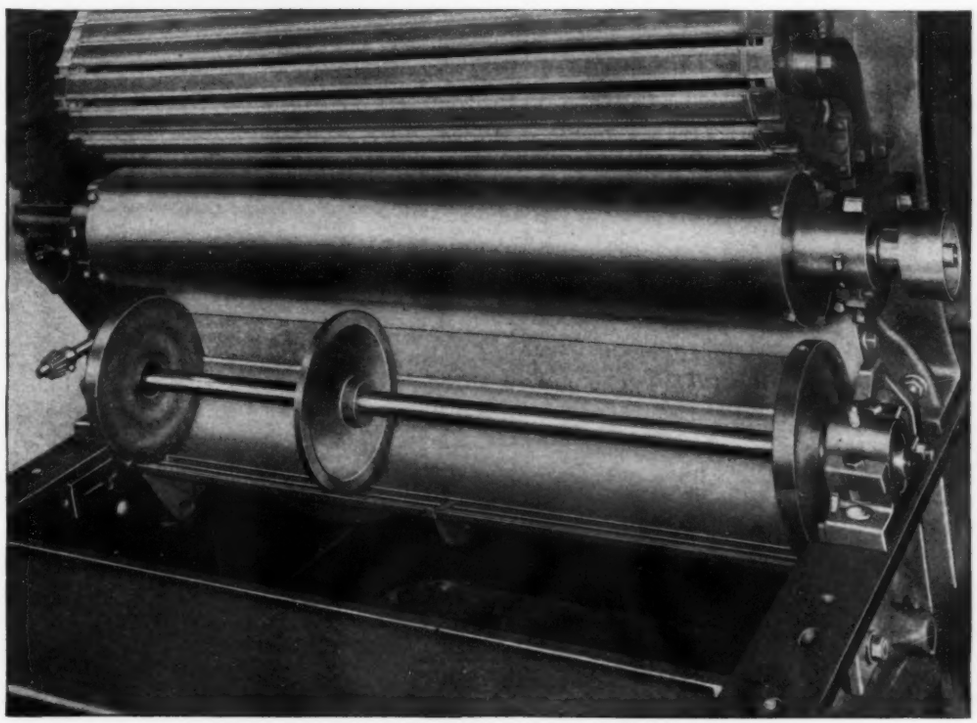


Fig. 2. A lickerin gage is used to obtain precise settings between the lickerin and those assemblies which surround it. These include the mote knives, the lickerin screen, and the cylinder

All Records Smashed . . .

Rayon production again sets new levels for world and U.S.

WORLD PRODUCTION of rayon in 1937 broke all previous annual records according to the figures made public by the *Rayon Organon*, published by Textile Economics Bureau, Inc. Output last year aggregated 1,725,000,000 lb. against 1,305,000,000 in 1936 and 1,072,800,000 lb. in 1935. Japan again led the world in total output with the United States ranking second. Comparative figures are shown in Table IV.

The United States produced 28% of the world's filament yarn output, but only 3% of the total world staple fiber production. Japan continues to be the world's largest rayon producer with about 325,000,000 lb. of filament yarn (29% of the world

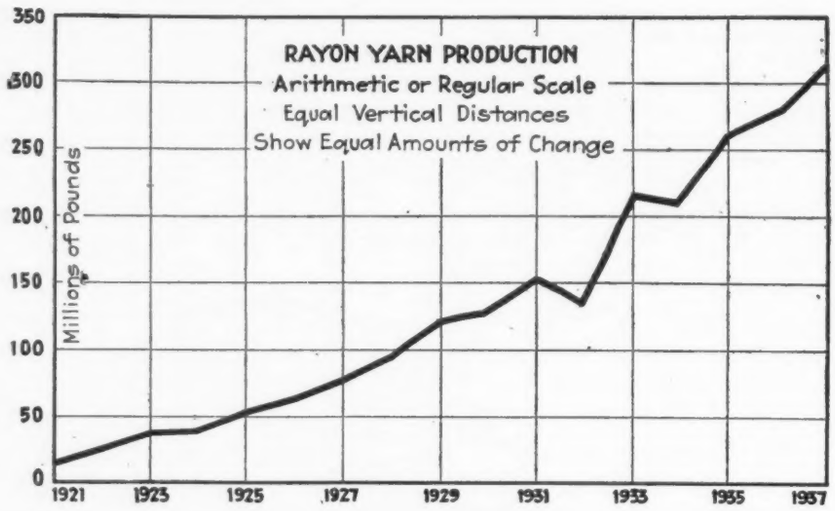


TABLE I—Basic Annual U.S. Rayon Data (Thousands of Pounds)

A. Rayon Filament Yarn

Year	Domestic Production: Viscose Cupra & Nitro		Domestic Production: Acetate		Domestic Production: Total		Total Domestic Shipments	Change in Domestic Stocks	Imports for Consumption	Exports	Import Balance	Domestic Consumption
1911	363	*100*	.....	....	363	*100*	315	+ 48	1,800		1,800	2,115
1912	1,111	*100*	.....	....	1,111	*100*	1,117	− 6	1,750		1,750	2,867
1913	1,816	*100*	.....	....	1,816	*100*	1,566	+ 250	2,430		2,430	3,996
1914	2,422	*100*	.....	....	2,422	*100*	2,444	− 22	2,740		2,740	5,184
1915	3,885	*100*	.....	....	3,885	*100*	4,107	− 222	2,450	Not re-	2,450	6,557
1916	5,778	*100*	.....	....	5,778	*100*	5,741	+ 37	900	ported	900	6,641
1917	6,544	*100*	.....	....	6,544	*100*	6,429	+ 115	370	sepa-	370	6,799
1918	5,846	*100*	.....	....	5,846	*100*	5,827	+ 19	180	rately	180	6,007
1919	8,228	*99.4*	50	*0.6*	8,278	*100*	8,219	+ 59	1,072	before	1,072	9,291
1920	10,005	*98.8*	120	*1.2*	10,125	*100*	7,238	+ 2,887	1,480	1925	1,480	8,718
1921	14,866	*99.2*	120	*0.8*	14,986	*100*	16,475	− 1,489	3,276		3,276	19,751
1922	23,947	*99.5*	120	*0.5*	24,067	*100*	22,631	+ 1,436	2,116		2,116	24,747
1923	34,839	*99.7*	120	*0.3*	34,959	*100*	29,529	+ 5,430	3,029		3,029	32,558
1924	36,208	*99.7*	120	*0.3*	36,328	*100*	40,289	− 3,961	1,954		1,954	42,243
1925	49,429	*96.8*	1,620	*3.2*	51,049	*100*	52,836	− 1,935	5,441	148	5,293	58,277
1926	60,073	*95.8*	2,620	*4.2*	62,693	*100*	51,285	+11,008	9,345	400	8,945	60,630
1927	70,408	*93.2*	5,147	*6.8*	75,555	*100*	85,020	− 9,866	15,034	401	14,633	100,054
1928	91,232	*93.8*	6,000	*6.2*	97,232	*100*	87,984	+ 9,052	12,144	196	11,948	100,128
1929	112,954	*93.0*	8,445	*7.0*	121,399	*100*	116,409	+ 4,767	15,055	223	14,832	131,464
1930	117,543	*92.3*	9,790	*7.7*	127,333	*100*	111,627	+15,361	6,340	345	5,995	117,967
1931	135,249	*89.6*	15,630	*10.4*	150,879	*100*	155,556	− 4,991	1,804	314	1,490	157,360
1932	116,379	*86.4*	18,291	*13.6*	134,670	*100*	151,838	−17,821	197	653	− 456	152,035
1933	172,402	*80.8*	41,096	*19.2*	213,498	*100*	210,949	+ 1,439	934	1,110	− 176	211,883
1934	170,307	*81.8*	38,014	*18.2*	208,321	*100*	194,694	+11,118	77	2,509	−2,432	194,771
1935	202,010	*78.4*	55,547	*21.6*	257,557	*100*	252,650	+ 2,688	26	2,219	−2,193	252,676
1936	214,926	*77.4*	62,700	*22.6*	277,626	*100*	297,346	−21,533	248	1,813	−1,565	297,594
1937	238,191	*76.3*	74,045	*23.7*	312,236	*100*	260,335	+50,511	est 860	est 1,390	− 530	261,195

B. Rayon Staple Fiber

	1928	*1929*	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*	*1936*	*1937*
Domestic Production — Staple Fiber.....	165	500	350	880	1,100	2,100	2,200	4,600	12,300	20,100
Production as % of Available.....	*45*	*26*	*40*	*55*	*33*	*39*	*91*	*76*	*49*	*50*
Staple Fiber Imports.....	54	1,052	427	663	2,185	3,302	215	1,457	12,718	20,250
Spun Yarn Imports.....	146	384	91	52	11	18	6	4	3	4
Total Available for Consumption.....	365	1,936	868	1,595	3,296	5,420	2,421	6,061	25,021	40,354

TABLE II—Distribution of Rayon Yarn by Trades

Units are thousands of pounds and per cent

Year	Hosiery lb.	%	Other knit lb.	%	Broad woven lb.	%	Narrow woven lb.	%	Miscellaneous lb.	%	Sub-Total knit lb.	%	Sub-Total woven lb.	%	Total shipment lb.	%
1925	10.7	*20*	10.5	*20*	26.1	*50*	2.9	*5*	2.6	*5*	21.2	*40*	29.0	*55*	52.8	*100*
1926	10.3	*20*	15.0	*29*	21.2	*42*	2.2	*4*	2.6	*5*	25.3	*49*	23.4	*46*	51.3	*100*
1927	16.7	*20*	28.9	*34*	31.5	*37*	3.3	*4*	4.6	*5*	45.6	*54*	34.8	*41*	85.0	*100*
1928	14.7	*17*	32.9	*37*	32.5	*37*	3.2	*4*	4.7	*5*	47.6	*54*	35.7	*41*	88.0	*100*
1929	18.8	*16*	43.7	*37*	45.4	*39*	3.1	*3*	5.4	*5*	62.5	*53*	48.5	*42*	116.4	*100*
1930	16.5	*15*	38.0	*34*	49.5	*44*	3.0	*3*	4.6	*4*	54.5	*49*	52.5	*47*	111.6	*100*
1931	21.1	*14*	48.7	*31*	75.6	*49*	4.0	*2*	6.2	*4*	69.8	*45*	79.6	*51*	155.6	*100*
1932	19.0	*13*	38.0	*25*	84.6	*56*	3.9	*2*	6.3	*4*	57.0	*38*	88.5	*58*	151.8	*100*
1933	17.0	*8*	41.3	*20*	141.3	*67*	5.5	*2*	5.9	*3*	58.3	*28*	146.8	*69*	211.0	*100*
1934	14.1	*7*	39.9	*21*	131.3	*68*	4.8	*2*	4.6	*2*	54.0	*28*	136.1	*70*	194.7	*100*
1935	14.7	*6*	47.9	*19*	179.5	*71*	5.2	*2*	5.4	*2*	62.6	*25*	184.7	*73*	252.7	*100*
1936	16.3	*5*	51.0	*17*	217.0	*73*	8.2	*3*	4.9	*2*	67.3	*22*	225.2	*76*	297.4	*100*
1937	12.7	*5*	38.8	*15*	196.8	*75*	7.2	*3*	4.8	*2*	51.5	*20*	204.0	*78*	260.3	*100*

total) and approximately 175,000,000 pounds of staple fiber. Substantial gains in staple fiber especially were also made by Germany and Italy during 1937.

Output also a Record

Despite business conditions prevailing during the closing months of 1937, production of rayon in the United States also broke all previous records last year. Filament rayon yarn production in this country during 1937 reached a new high total of 312,236,000 lb., an increase of 12% over the 1936 figure of 277,626,000 lb. The viscose plus cuprammonium rayon yarn production at 238,191,000 lb. increased 11% over its 1936 total, while the acetate rayon yarn production of 74,045,000 lb. was 18% greater than in 1936. Details are shown in Table I.

Production of rayon staple fiber at 20,100,000 lb. showed an increase of 63% over the 1936 total of 12,300,000 lb. (Table I-b).

Commenting on the American market, the *Organon* states that "total domestic deliveries of rayon yarn to fabricators during 1937 amounted to 261,195,000 lb., this being the sum of American producers' deliveries, plus yarn imports for consumption. These deliveries were below the 1936 total, but were above the corresponding 1935 figure.

"The difference in market psychology as between the end of 1937 and the end of 1936 must be taken into account in evaluating this data. The end of 1936 saw a speculation in rayon woven goods which stimulated yarn deliveries so that producers' stocks were reduced by 21,500,000 lb. during 1936 and inventories were built up in fabricators' and distributors' hands not only in the form of yarn, but chiefly in grey and finished goods.

"By the end of 1937, all of these market factors were in reverse: producers' stocks had been built up by approximately 50,000,000 lb. and inventories of yarn, gray goods and finished goods in the hands of others probably were lower than they were at the previous year-end."

Distribution by Trades

As regards the distribution of rayon by trades during 1937, the broad weaving industry showed some percentage-of-total gain over 1936, but all types of outlet were badly hit by the depression of the closing months of 1937. A noteworthy gain by rayon during 1937 was its continuing, increased use in fine woven lingerie fabrics, especially at the expense of silk. (Table II).

Production by Denier

The 1937 average denier of viscose plus cuprammonium yarn spun was the same as in 1936, although these two averages are still well below the 1935 level. There were but small relative shifts between deniers from 1936 to 1937.

During 1937, bright yarn comprised about one-half of the viscose and cuprammonium production, semi-dull yarns less than 25 per cent of the total, and full dull or pigment yarns somewhat over 25 per cent of the total.

Table III shows the total production of rayon yarn by fine, medium, and coarse deniers.

TABLE III—Yarn Production by Denier (Per Cent)

	1927	*1928*	*1929*	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*	*1936*	*1937*
Total Fine Deniers (112 denier & finer)	% 8.5	% 9.9	% 11.5	% 14.2	% 19.1	% 26.0	% 26.4	% 26.8	% 21.0	% 24.3	% 24.9
Total Medium Deniers (113–162 denier)....	74.3	74.0	72.9	71.7	69.0	64.8	62.8	59.5	62.1	61.7	61.2
Total Coarse Deniers (163 denier & coarser).....	17.2	16.1	15.6	14.1	11.9	9.2	10.8	13.7	16.9	14.0	13.9
Total All Deniers...	100	100	100	100	100	100	100	100	100	100	100

TABLE IV—World Rayon Production (Millions of Pounds)

	(est.) *1937*	*1936*	*1935*	*1934*	*1930*
Rayon Filament Yarn.....	1,125.0	1,006.0	932.9	771.1	450.4
Rayon Staple Fiber.....	600.0	299.0	139.9	52.7	6.1
Total.....	1,725.0	1,305.0	1,072.8	823.8	456.5

The final figure of 312,236,000 lb. for rayon filament yarn production in the United States in 1937 compares with TEXTILE WORLD's estimate of 325,000,000 lb. in its Annual Rayon Number last September. In view of what happened to the business structure since that month, we are surprised we were that close. . . . Our estimate of staple fiber production for the year was practically on the nose: We estimated 20,000,000 lb. and the final figure was 20,100,000.—EDITOR.

Coordination of Records

Simple forms for mill and sales office

By FRANK BUCKLEY
and SIDNEY C. STERNBERGER

AN EFFICIENT, comprehensive, and simply operated coordination of mill and sales-office records is obtained by use of the two simple forms described in this article. Experience indicates records are best kept in loose-leaf form and on a seasonal basis, using separate sheets for each style or quality manufactured.

Fig. 1 represents the record maintained at the sales office. It shows the merchandising department, at a glance, the status of individual orders for all customers. As orders are received, they are entered chronologically, by customer, date, and order number, in columns provided. The total number of pieces in each order is listed in the proper column and is then allocated to the columns in the particular months when shipments are to be made in accordance with the customers' delivery requirements. A cumulative total of pieces of each style ordered is also kept, in the column which is so marked.

As shipments are made or cancellations received, amounts in monthly columns are struck out and the reduced figures inserted. Data covering shipments may be obtained either from the day's invoices or from a daily shipping list compiled at the mill and forwarded to the sales office. Total shipments for each day are added to the cumulative shipment column. Returns and cancellations are recorded in red ink, cumulatively, in a separate column.

The three columns at the extreme right of the form, kept cumulatively, show production figures against customers' orders. The first of these is a record of manufacturing orders given to the mill. The second column is taken from daily slashing reports, while the third is compiled from the mill's weave-shop records of cloth woven. The entire record is summarized weekly.

SALES OFFICE FORM — STYLE 300-24

Date	Order No.	Customer	Total Pieces Ordered	Cumulative Pieces Ordered	Cumulative Pieces Shipped	Returns & Cancellations	J	F	M	A	M	J	J	A	S	O	N	D	Cumulative Pieces in Manfre	Cumulative Cut Slashed	Cumulative Pieces in the Gray
6/1	17656	Mayfright & Co.	75	6/1 75	6/20 10	7/4 35						0 15 25	5 25	25					5/20 200	6/12 50	6/20 30
	17659	Watson & Sons	55	6/1 55 130	7/1 15 25								3 5	15	35				6/2 112 312	6/5 52 100	6/22 10 40
	17665	Ready-Made Inc.	12	6/1 12 142	7/3 52 77									3	9						6/23 10 50
6/2	17669	W. Mightson & Bro.	130	6/1 130 272									20	30	50	20					6/30 30 80
	17670	Tyrone & Johnson	40	6/2 40 312										10	30						
Weekly Summary				312	77	35							8	83	89	20			312	100	80

FIG. 1

MILL FORM — STYLE 300-24

Date	Daily Totals Pieces Ordered	Daily Totals Pieces Shipped	Returns & cancellations	J	F	M	A	M	J	J	A	S	O	N	D	Cumulative Pieces in Manfre	Cumulative Cuts slashed	Cumulative Pieces in the Gray
6/1	142								25	30	43	44				5/20 200	6/12 50	6/20 30
6/2	170 312								25	30 60	40 83	80 123	20 143			6/2 112 312	6/15 52 100	6/22 10 40
6/29		10							10 15	60 75	73 148	124 272	30 302					6/23 10 50
7/1		15 25							15 0	60 60	83 143	124 267	30 297					6/24 30 80
7/3		52 77								52 8	83 91	124 215	30 245					
7/14			35								8	83	89	30				

FIG. 2

From this summary the following information can be ascertained: the number of pieces due on orders for each month is shown in totals of the various monthly columns. By subtracting the cumulative total of shipments and returns and cancellations from the cumulative total of orders received, the number of pieces due against all open orders is obtained. A comparison between the total manufacturing orders given to the mill and the total pieces ordered shows the number of pieces not covered by production. The difference between the total manufacturing orders given to the mill and the number of cuts slashed shows cuts still to be prepared for slashing. The number of pieces in the slashing room still to be woven is ascertained by subtracting total gray pieces from total cuts slashed. The record of gray goods on hand is shown in the difference between total gray pieces and total pieces shipped.

Fig. 2 is a condensed version of Fig. 1, and represents the record kept at the mill. When copies of orders are received, they are summarized and the totals entered on this form. Order copies are then filed by customer and delivery date. Thus, in making shipments, reference may be made to the actual order and notations made thereon.

The operation of the form shown in Fig. 2 is as follows: The total of a day's orders is entered in the first column. Total deliveries due are entered under appropriate months. Total shipments for each day are entered in the second column and are deducted from the month or months against which they apply. Entries in the returns and cancellations column are made in red ink, from copies of cancellation slips issued by the sales office. These are also deducted from the months for which deliveries were to have been made. Therefore, by totaling the daily orders column and reducing its total by the combined totals of shipments and returns and cancellations, one obtains a figure which should check with the aggregate of the totals of the monthly delivery columns as in Fig. 1.

The two records can be checked against each other by mill and sales office through a weekly exchange of summaries.

Textiles Go Formal

Dressy put-ups help sales, survey indicates

THE MANUFACTURERS of branded textile merchandise are gradually becoming package-conscious, and are making real progress in the use of the package as a sales instrument. However, there is still room for improvement in the put-up of textile merchandise. This point is brought out strongly in a survey of textile packaging recently completed by the Institute of Package Research, the fact-finding department of *Modern Packaging Magazine.*

Results of the study, which were published in that periodical, offer many valuable slants for manufacturers. During the survey questionnaires were sent out to hundreds of store buyers and the replies cover various phases of textile packaging including: its present scope, its unexploited opportunities, objections to packages, packages as aids to holiday selling, effect on returns, and—especially interesting at present—the trend toward informative packages.

Certain data stand out strikingly in the picture. The infants' and children's wear division apparently has the highest percentage of packaged textiles; of 50 buyers questioned, 41 reported diapers as an all-packaged line. In women's accessories, underwear and hosiery are more than 50% packaged, but oddly enough, gloves are lagging far behind. Asked to state what unpackaged textiles would be helped by packing, children's and infants' wear buyers urged more extensive use of the special wrapping. Linens and domestics buyers also favored more packaging, while buyers of mens' and boys' furnishings, and also women's accessories, opposed any further efforts by mills to package their lines.

Retailers were invited to cite objections, if any, to modern packaging of textiles. Would they recommend that any textiles, now packaged, be left unpackaged? The buyers in all departments replied overwhelmingly in the negative. As might be expected, buyers agreed that the package aided holiday sales; in mens' and boys' wear departments the 53 buyers questioned were unanimous on that point.

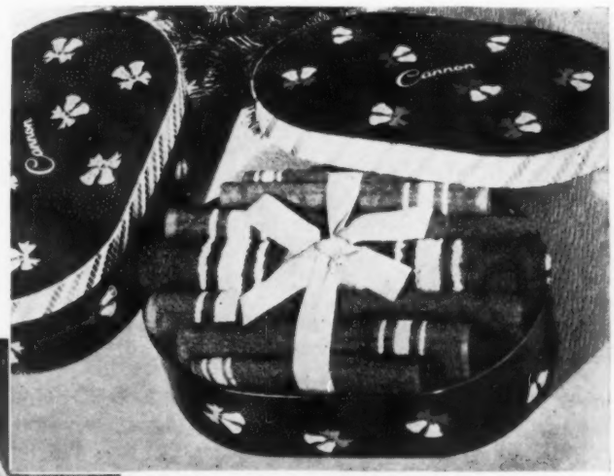
The buyers' answer to the question: How does packaging affect returns of merchandise? proved rather a surprise. While linens and domestics buyers agreed strongly that packaging lowered returns, women's accessories buyers were not so sure; and the buyers of infants' and children's wear and men's and boys' wear voted definitely that packaging had no appreciable effect on returns.

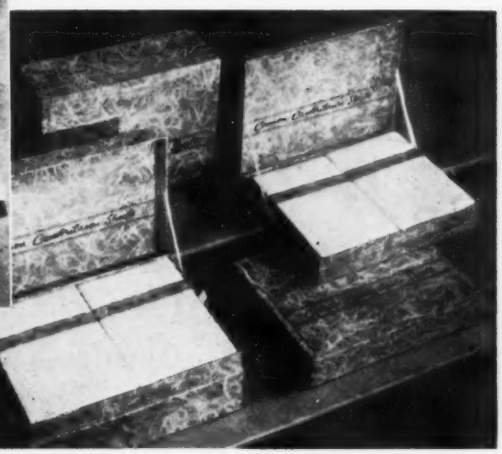
Especially interesting were the answers which the retailers made to the very timely question: What information should be carried on the package? All buyers in all divisions, with negligible exceptions, voted in favor of having brand names appear on the package. As regards use of manufacturers' names, the sentiment was about evenly divided. Opinion overwhelmingly endorsed having instructions for laundering on the container. As regards fiber information, all divisions except men's and boys' wear buyers, favored giving the consumer such data on the package.

The survey included two case histories: Cannon Mills, New York, and the wholesale division of Carson, Pirie & Scott, Chicago. Cannon Mills was commended as "among the first and certainly the most progressive textile companies in packaging," and particular mention was made of the fact that the Cannon hosiery line, introduced last year, was smartly packaged from the first day it appeared.

Concluding, the report finds that, while textiles are far behind food, drugs, tobacco and other fields as regards containers, textile manufacturers are gradually becoming more favorable to improved packaging, due largely to the increasing importance of brands in the industry.

Ingenuity and artistry go hand-in-hand with practical salesmanship in these smart containers which lifted utilitarian textiles to the gift class and helped increase Christmas demand for Cannon Mills products. All were designed by Cannon artists.





The band-box, and the box in which sheets are packed to resemble stationery were made by A. Hendon & Son, N. Y.; cellophane for hosiery pack by Du Pont

Gypping the Pick Meter

Important mill losses disclosed by arrest of operatives—preventive measures

By H. E. WENRICH

THE REASON for this article is the item reproduced from the Wilkes-Barre, Pa., *Times-Leader*, for Dec. 3, 1937.

Seventeen textile mill weavers were arrested, Dec. 2, charged with malicious mischief in tampering with loom pick meters and with false pretense, the allegation being that, by speeding up the meters, the men received money for work not performed. Thus was disclosed a racket, amazing in its simplicity and ingenuity, which may well be robbing textile mills of many thousands of dollars each year.

The practice is not confined to a single mill and it has been going on for a considerable length of time. These facts were disclosed in an investigation made by the writer following the arrests referred to above. Some of the weavers interviewed had no hesitancy about describing in detail the methods used to gyp various types of pick meters. The interviews disclosed also that many of the weavers who are attempting to get something for nothing are "floaters"—workers who travel from town to town and from job to job—and that at least one of their number has consistently robbed his employers for a period of nearly a year in this way.

All the weavers arrested worked on the third shift, from 10 p.m. to 6 a.m. At about 3 to 4 o'clock in the morning they would take time out to run up the pick clocks on each loom, in order that they might have a large run for the shift. However, tampering with pick meters is not confined exclusively to the night shifts, although it is tried less frequently in the daytime.

17 Belmont Silk Workers Arrested

Young Men Accused of Tampering With Loom Meters—13 Out On Bail As 4 Held

Seventeen young men employed at Belmont Silk Company at Forty Fort were arrested last night while at work, and, following a hearing before Justice John T. Harris of that town, were ordered committed to jail in default of bail. They were charged with malicious mischief in tampering with meters on the looms of the machines and with false pretense, the allegation being that by speeding up the meters they received money for work which they did not perform.

All seventeen were taken to the new Forty Fort Town Hall and de-

prosecutor was Harry Goldberg, manager of the mill.

Paid by "Picks"

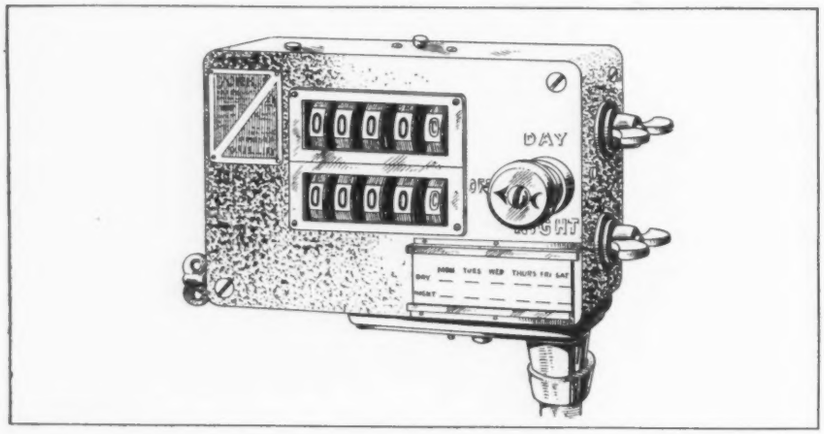
In explaining the case, Squire Harris says that employes are paid by picks and not by yardage, so that by speeding up the meters on the looms they were able to turn out more picks. The picks are the number of threads in an inch of cloth. There might be 36 picks in an inch or there might be 50, or some other number, but the number of picks determines the speed of the shuttles used in weaving of silk.

The names of those young men who gave bail, as reported by Squire Harris follow: Mike Kushner, 111 Thomas street, Kingston; Charles Yaraginski, 46 State street, Larksville; Anthony Woichoski, 89 Mill street, Luzerne; Chester Zukowski and John Zukowski, 321 Shoemaker street, Swoyerville; Joe Sincavage, 12 [illegible] Hi[illegible]street, Wil[illegible]Bar

Clipping from Times-Leader

Misdirected Ingenuity

Several different methods of tampering with pick meters, depending on types of looms in use and on other local conditions, have been devised by the weavers. Generally speaking, the methods consist of loosening or removing meters or meter drive-shafts and causing them to register more quickly than usual by driving them temporarily from some fast-moving part, by means of cable cord, leather belt, or other agency. One imaginative weaver even went so far as to remove the pick meters from his looms each noontime, place them in a paper bag, take them home with him, and run them up on a sewing machine during the lunch period. All types of meters—both old and new—can be gypped. No method of attaching the meter to the loom—not even attaching it on the side of the loom behind the head motion and next to the loom frame—seems to baffle the crafty weaver who puts his master mind to work on it.



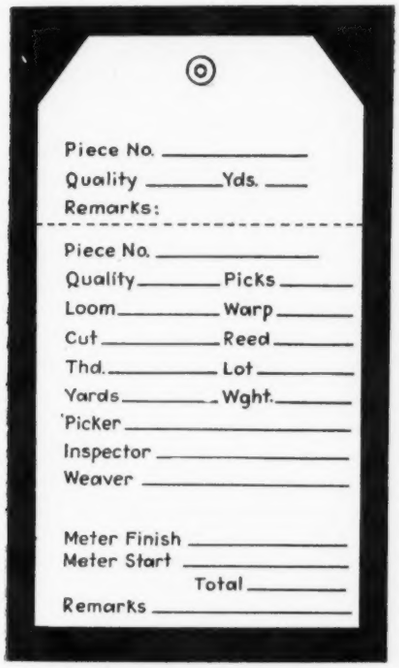
Tampering with pick meters is more common on the night shift.

Preventive Measures

Ways and means of gypping pick meters are numerous. The best means of prevention are to remove such

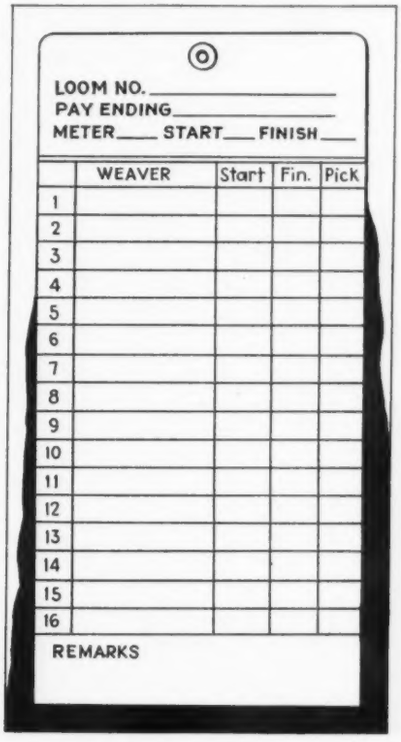
temptations as beset the smart, but unscrupulous, weaver who turns his talents to this purpose. Painting the ends of angle rods and stands with a bright enamel is a good method, as any tampering with meters will break the enamel and be readily noticeable. Welding connecting pins in place will likewise help to prevent such practices, where the method of robbing a meter depends on removal of pins.

Fig. 1. Piece ticket designed to permit determination of weaving costs can be used also as a check on the pick meters.



Another system of preventing gypping of meters is to place the meter reading on each piece ticket at the starting and ending of each piece. Yardage of a piece will make it possible to determine the number of picks the piece should contain, after making allowance for pick-outs and take-up, and it is then easy to ascertain whether the picks metered are in line with the yardage woven. It also pays to have the cloth inspector date cloth on the looms as he makes his rounds, and measure cloth on these date marks, comparing yardage to picks on each loom.

Fig. 2. The pick meter cards for the previous pay period should be checked against those for the present period.



The piece ticket shown in Fig. 1 was designed several years ago by the writer to permit accurate determination of weaving costs. It can be used also as a check on the pick meters.

The small tab above the perforated line is attached to the piece when it is shipped to the dyer. The bottom part of the ticket is kept at the mill office for reference purposes.

One of the various types of pick cards used in textile mills is shown in Fig. 2. By clever manipulation of the entries on these cards, the weaver can gyp the pick meters without running up the meters. For instance, simply by erasing the meter-reading figure at the top of the card (which indicates the reading at the start of the pay period) and substituting a lower figure, a weaver can increase the apparent number of picks woven. This method of gypping pick meters entails a small amount of bookkeeping, as weavers must also re-mark their cross-shift weavers pick cards accordingly. To overcome fraud of this type, a check of pick cards from the previous pay period against those of the present period must be made.

If not detected, a few dishonest weavers can cause the failure of a mill. The pick meter gypper is a menace both to his employer and to his honest fellow workers. It is hoped that this article will be of assistance to mill executives and overseers in preventing losses caused by gypping the pick meter.

Rayon Winding

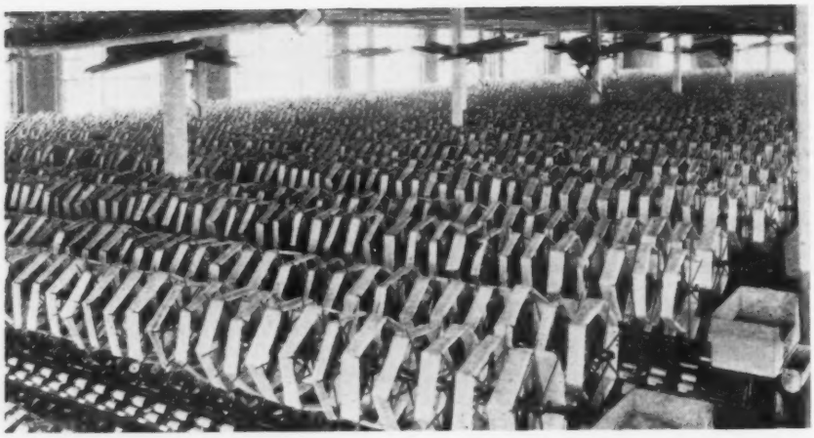
Job analysis is aid in setting rates, scheduling production, and increasing efficiency

By R. B. WILLIAMS

TEXTILE MILLS are rapidly getting away from the old hit-or-miss manner of setting employees' tasks and piece rates and are establishing these by more precise methods. Outlined below is a simple procedure for analyzing the operator's job in a rayon winding department. Properly conducted, this analysis will yield fundamental data of value in setting rates, scheduling production, and increasing the efficiency of the department. In mills which do not have a regular time study man, the tests, observations, and calculations can be made by the cost man with the cooperation of the winding-department overseer.

Run-out of Package

The first information required is the run-out of the supply package. The run-out varies to a great extent, depending on whether the package is a cone, spool, skein, or twister bobbin. A cone will last anywhere from 8 to 16 hr. when run off at a speed of 100 to 120 yd. per min. The time depends largely on the size of the cone; some acetate cones weigh only 2½ or 3 lb., while rayon cones run as high as 4 or 4½ lb. As spools hold considerably less yarn than cones, particular care must be taken to keep deniers separate. Approximately the same weight for all deniers is put on a spool, but the number of yards decreases as the denier increases. Skeins are in a class by themselves, because of increased yarn breakage. On this type of package a greater number of tests should be averaged.



In analyzing the operator's job in the winding department, one should first determine the run-out of the supply package

Twister bobbins offer the shortest running time, and attention should be paid both to size of bobbin and denier of yarn. Usually only one or two bobbin sizes are found, but they must be studied individually. It is advisable to make at least 25 tests on each type of package.

After an average is made for the supply run-out, select 20 or 25 filling bobbins of the type used on the job, making certain that the length, diameter, and taper are the same as in the specifications. Weigh the empty bobbins on a grain scale, write the weight of each bobbin on a string tag, and tie the tag to the bobbin. Have the winding operator fill the bobbins one at a time, and clock the number of minutes it takes to fill each one. Write the time on the tags, making certain that the tickets correspond to the correct bobbin by weight.

When all bobbins are filled, weigh again, and note weights on the tags. Then size the yarn, taking two or three tests; average; and write this figure on the tags. Subtract the weight of the empty bobbin from the weight of the full bobbin and convert the net weight of the yarn from grains to pounds. From the size tests, determine the number of yards per pound of the yarn and extend by the pounds per bobbin, which will give the number of yards of yarn on the bobbin. From this result and the interval of time required to fill the bobbin, the winding speed in yards per minute can be calculated.

An operator's work can be divided into four main classifications, as follows: (1) changing filling bobbins; (2) changing supply packages; (3) repairing yarn breaks; and (4) spindle cleaning, personal, and miscellaneous, which will consume about 4 or 5% of the operator's time. The most important duty of a winding operator, is bobbin changing, and anything that can be done to facilitate this part of the job will have a favorable effect on the efficiency of the department. In a well-managed winding room the operators should be furnished with a sufficient supply of cleaned bobbins within easy reach from all sections of their spindles. Boxes of the supply packages should be close at hand, as should the pinboards on which are placed the filled bobbins as they come off the spindles.

The next step is to determine the time taken by the operator to change bobbins, repair breaks, and change supply packages. Test at least two different days, in order to counteract any change in the operator's attitude or ability. While this part of the study is being made, note how many yarn breaks occur per supply package. Make a large number of observations, for it is only by taking the averages of many tests that reasonable accuracy in the results can be attained.

As an example, consider a winding job of 150-denier rayon from 8,000-yd. skeins to 6-in. bobbins, operator tending 40 spindles. Tension is controlled by friction straps on the hubs of the swifts, and the yarn is run through a porcelain eye on a pigtail compensator. (It should be noted that a compensator in conjunction with friction tension causes a larger number of breaks on tender yarn than a progressive-disk tension. This is most evident when the operator starts a spindle or if the yarn contains weak spots.)

Assume that the study gave the following figures:

Average time for operator

To change bobbin	0.16 min.
To change skein	0.58 min.
To repair break	0.35 min.
Allowance for personal	2%
Allowance for cleaning	2%

Factual Data

Yards per minute	100
Running time of bobbin	16 min.
Length of skeins	8,000 yd.
Running time of skein	80 min.
Breaks per skein	½

The spindle rating is then calculated as follows:

Spindle Rating = [1 min. — (cleaning + personal allowance)] ÷ [Stops per spindle per min. × min. per stop]

Spindle Rating = [1 — 4%] ÷ [(1/16 × .16) + (1/80 × .58) + (1/160 × .35)]

Spindle Rating = 49½ spindles at 100% efficiency.

Whereas theoretically an operator could tend 49½ spindles at 100% efficiency, for practical purposes the suggested base under the conditions given above is 60 spindles at 80% efficiency.

After bases have been established for various types of yarn and yarn packages, they can be used in the regular way for figuring piece rates and production schedules.

Eliminating Waste

In studying a job, one will find it advisable to pay close attention to the conditions affecting the operator, for she is the controllable variable in making the department more efficient. Analyze the cleaning operations. If a girl spends 20 min. a day to clean spindles and sweep up lint and thread, she is sacrificing 4% of her productive time. Check to see if the winding room can save money by employing a low-priced cleaning hand. One cleaner can do as much cleaning as 20 or 25 operators at 20 min. a day per operator.

Determine the time wasted in walking for pinboards, yarn, and bobbins. Production is also lost when frames are changed over for different yarns, traverse wheels, or bobbins; and it is advisable, therefore, to look into the possibility of running certain operators on a day-pay basis for continuous sample work if such a system is not already in effect.

Efficiency, or the ratio of actual productive hours to total operator hours, is the most important factor of any job. The fact that one operator runs 100 units compared to another girl's 80 does not mean that she has exceptional ability. Nine times out of ten, an analysis will show that the 100-unit set will produce somewhere about 60% efficiency, while the 80-unit set will attain probably 80%. This means that the operator on the 100-unit set runs 60 units steadily, while the other runs 64. It is easy to realize how much more production can be had from a given number of units, with consequent reduction in burden, when run in smaller, more efficient sets. The effect is exceptionally noticeable in the amortization of new machinery.

Adjustable-Speed Spinning

On woolen and worsted frames increases machine efficiency and total production

By C. A. M. WEBER
Westinghouse Electric & Mfg. Co.

RECENT investigations have resulted in two new developments in the driving of woolen and worsted spinning frames. The first consists of varying the motor speed with the traverse bar or builder motion in order to maintain a constant tension on the yarn as it is being wound on the bobbin. The other development consists of the use of an adjustable-speed motor, so that the speed of spinning can be varied, depending on the kind of work, size of yarn, and atmospheric conditions. This article has to do particularly with adjustable-speed spinning.

Advantages of this type of control of spinning-frame motors are numerous, and additional points of superiority are being discovered as wider mill distribution of adjustable-speed spinning is obtained and as it is applied to different types of fabrics.

End Breakage Reduced

In some mills, where low-grade stock is being spun, it has been found that there is a wide variation in the strength of yarn, and end breakage is serious when a constant-speed motor is used. Also, considerable time is lost in tying-in or in changing gears to reduce speed. With an adjustable-speed motor, the speed can be lowered while the low-strength portion of the yarn is being spun, and immediately increased as yarn strength improves, thus increasing over-all production. In the case of constant-speed spinning, gears are selected which assure a minimum of broken ends for the whole doff. This results, of course, in less production, which increases cost of the product.

In other mills, it has been found that the tension which the yarn will stand depends largely upon atmospheric conditions. These may vary widely in the course of a day, or even within a few hours. In order to avoid the time lost in changing gears or in tying-in excessive broken ends, adjustable-speed motors can be regulated to a speed suitable for the yarn being spun under the conditions existing at any particular moment, and the speed can be increased instantly as soon as it appears that the yarn will stand a higher speed. This, again, increases total output.

Some mills also find that after an idle period of a day or two, such as over a week-end, the spinning frames are stiffer, causing higher tension on the yarn at the start than after the frames have been in operation for several hours. Mill master mechanics consider this increased friction and drag to be due to oil having been squeezed out of the various bearings of the spinning frame during the shut-down period. In order to avoid having to put up with high end-breakage, or changing gears back and forth, adjustable-speed motors are being used, so that motor speed can be suited to existing conditions.

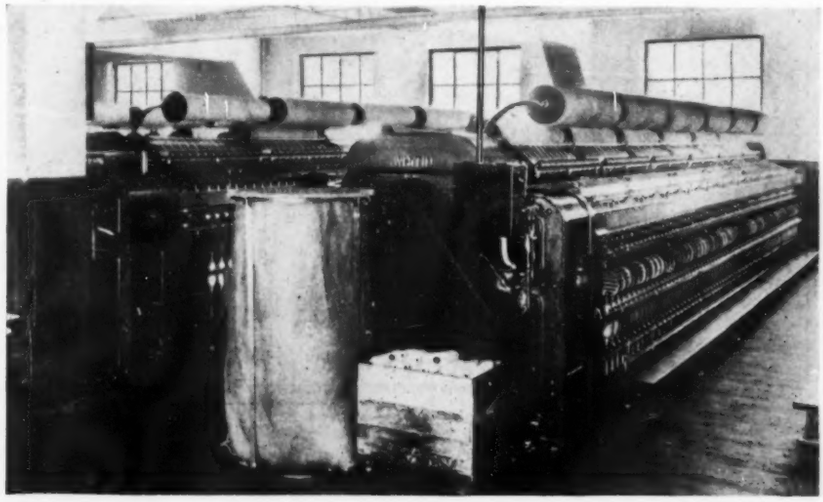
Equipment Required

For adjustable-speed spinning, wound-rotor motors are used. These are controlled by means of face-plate type rheostats, with the necessary resistance for regulating the speed. Also contained in each control box is a line contactor, and a secondary contactor with a timing device so arranged that the motor always starts with secondary resistance in the circuit. This secondary resistance is cut out at a predetermined time by a timing relay. If desired, secondary starting resistance can be cut in two steps, by using, in conjunction with the timing relay, a two-pole time regulator which may be arranged with an interlock so that a portion of the secondary starting resistance is cut out after one predetermined period, and the remaining portion cut out after a second predetermined interval.

These timing devices permit the motor to be started with whatever secondary starting resistance is necessary to meet the characteristics of the spinning frame in question. In some cases, slow acceleration is required; in others, rapid acceleration is desirable. Slow acceleration can be obtained by high secondary resistance, and rapid acceleration by arranging a secondary starting resistance to give maximum torque at start.

Each spinning frame is equipped with a shipper rod which operates a master switch. This enables the frame to be started and stopped at the will of the operator and, when starting, brings the frame up to the pre-set speed in accordance with the setting of the regulating rheostat.

Adjustable-speed spinning makes possible regulation of woolen and worsted spinning-frame speeds to suit existing conditions



Mothproofing Solutions

Results of investigation to determine protection afforded by two types

By E. A. BACK
Bureau of Entomology and Plant Quarantine
U. S. Department of Agriculture

IT IS common knowledge that woolen and worsted fabrics are readily eaten by the larvae of clothes moths and carpet beetles. The latter are commonly known as buffalo moths, and, for this reason, the layman frequently refers to both of these insects as simply "moths." They are, of course, two entirely different types of insects—the clothes moth larvae being known as "moth pests," and the carpet beetle larvae as "dermestid pests," since carpet beetles belong to the family Dermestidae. Hence one often reads of fabrics being treated with "mothicides" and "dermesticides" to render them resistant to the attacks of these insects. It is frequently asserted that a fabric treated with a "mothicide" may not be protected against dermestids.

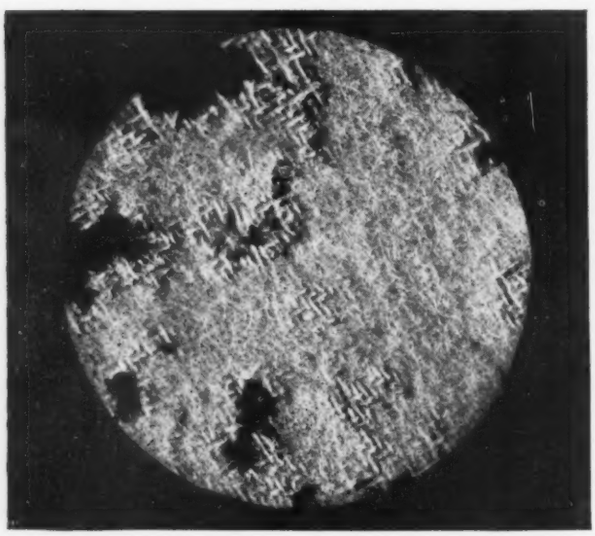
In the course of investigations in the Bureau of Entomology and Plant Quarantine on the control of insects that destroy fabrics, the writer has, for the last 15 years, been interested in the use of mothproofing solutions as a means of preventing damage. Among the many species that attack fabrics, special attention has been given to the webbing clothes moth (*Tineola biselliella* Hum.), the furniture carpet beetle (*Anthrenus Vorax* Waterh.), and the black carpet beetle (*Attagenus piceus* Oliv.), and many tests of various mothproofing solutions for protecting fabrics against these three insects have been made. Early investigations showed that in experimental work clothes moth larvae exhibited a high normal mortality, which often led to a false interpretation of results. On the other hand, it was determined that the furniture carpet beetle, *Anthrenus vorax*, did not suffer such a high mortality; and, furthermore, that fabrics resistant to carpet beetles were also protected against clothes moth larvae. In view of these findings, *Anthrenus vorax* has been used almost entirely in tests to determine the practical value of mothproofing solutions.

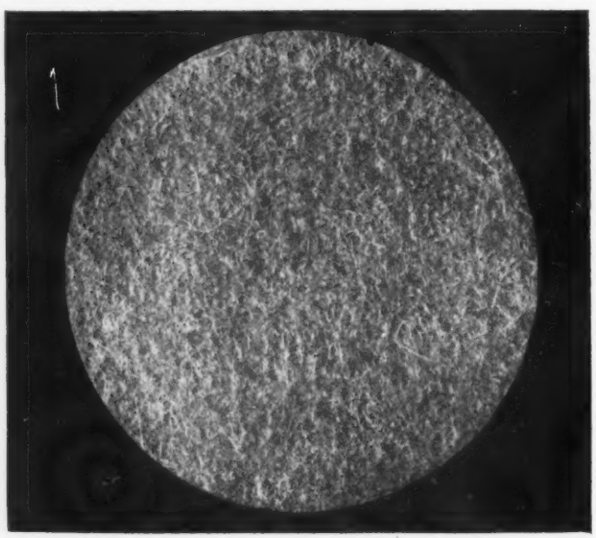
In recent years a number of arsenical mothproofing solutions have appeared on the market. These materials were accompanied by extensive advertising, which stated in effect that such arsenical solutions gave positive protection to fabrics against moths, that one application was guaranteed to prevent moth damage for the life of the article treated, and that moth larvae could not possibly damage articles treated. One 1936 advertisement of an arsenical solution said to contain "active ingredient (sodium arsenite) ½ of 1%, inert ingredients 99½%" claimed that "one application to rugs, furniture, or clothing, when done properly according to directions, is sufficient to protect from further infestation of moth larvae and carpet beetles."

Early investigations relative to the efficacy of aqueous arsenical solutions for treating fabrics to render them moth resistant, led the writer to state that such solutions were of little value for this purpose. During 1936 further experiments were carried out with these solutions. One of these dealt with the solution referred to in the 1936 advertisement mentioned above. Samples of cloth treated by spraying and immersion in this solution, as well as samples of the same cloth untreated, were quickly ruined by the insects.

Twelve months after the tests were started, both samples were so badly eaten that the treated pieces could not be distinguished from the un-

Fig. 5. Untreated wool blanketing photographed after exposure for three months to about 50 larvae of Anthrenus vorax *(furniture carpet beetle). Fig. 6. Wool blanketing treated with pentachloro-dioxy-triphenyl-methane-sulphonic acid solution shows no observable injury after three-month's exposure*





treated ones. The results with cloths secured from a private laboratory and from a manufacturer were the same as those obtained with cloths treated in the testing laboratory of the Bureau of Entomology and Plant Quarantine. The results of these tests serve further to substantiate the earlier statements of the writer that aqueous arsenical solutions are of doubtful value as mothproofing agents.

Tests on Army Suitings

Another series of experiments with mothproofing materials carried out by the Bureau of Entomology and Plant Quarantine during the last two years is of special interest. In cooperation with the War Department in testing army suitings, samples of untreated cloth and some that had been treated with a penta-chloro-dioxy-triphenyl-methane-sulphonic acid solution applied in the hot dyebath to the extent of 2% by weight of the chemical to the weight of the dry woolen goods were tested. Samples of the treated cloth, one group of which had been dry-cleaned six times, one that had been washed in water and a neutral soap six times, one that had been washed in water and caustic soap six times, and two that had been weather-tested 10 and 30 days, respectively, were also tested. After about five months, during which time each sample had been exposed to about 50 larvae of *Anthrenus vorax*, the original treated cloth and the treated cloths that had been dry-cleaned, water-washed, and weather-tested showed no appreciable injury; the treated samples that had been washed in water and caustic soap showed slight injury in spots, but nowhere was the warp affected; in all of the check or untreated samples the pile and warp were badly damaged, with large holes developing. Results of these tests are shown in Figs. 1 to 4.

An examination of the insects in the tests, made over three months after they had been placed on the cloths, showed that on the six samples of cloth referred to in the preceding paragraph, 41, 29, 25, 28, 21, and 33 larvae, respectively, were dead; that 7, 9, 15, 12, 15, and 7 larvae had pupated and died; that 9, 13, 10, 11, 11, and 11 larvae had become adults which had laid many eggs, all of which had hatched into larvae which in turn died without apparent feeding. One sickly abnormal larva was found alive on each of four cloths, and seemed to have been eking out an existence upon the dead bodies of larvae.

An examination of the six untreated cloths used as a check showed that 10, 12, 11, 9, 10, and 15 larvae, respectively, were alive and very thrifty looking; that 8, 2, 3, 5, 17, and 10 had died; that 1, 1, 3, 8, 3, and 6 had pupated and were alive, except 2; and that 25, 27, 19, 21, 13, and 20 had matured to adults that had laid many eggs, all of which had hatched into larvae still newly hatched but very much alive and feeding.

Fig. 1. Subjected for five months to attack of 50 well-grown larvae of Athrenus vorax *(furniture carpet beetle)*

Fig. 2. Treated with pentachloro-dioxy-triphenyl-methane-sulphonic acid solution showed no appreciable injury

Fig. 3. Army cloth treated as in Fig. 2, then washed six times in water, was not damaged appreciably

The difference in the reaction of the newly hatched larvae to the cloths treated with the pentachloro-dioxy-triphenyl-methane-sulphonic-acid solution is of great practical importance, especially when considered along with the inability of the more mature larvae, placed originally on the treated cloths, to cause injury.

Of two pieces of army suiting, each about 3 ft. square, kept from January to December, 1937, in the laboratory in an open closet where insects had access to them, all injury was confined to the untreated fabric, while that treated with a pentachloro-dioxy-triphenyl-methane-sulphonic-acid solution escaped unharmed.

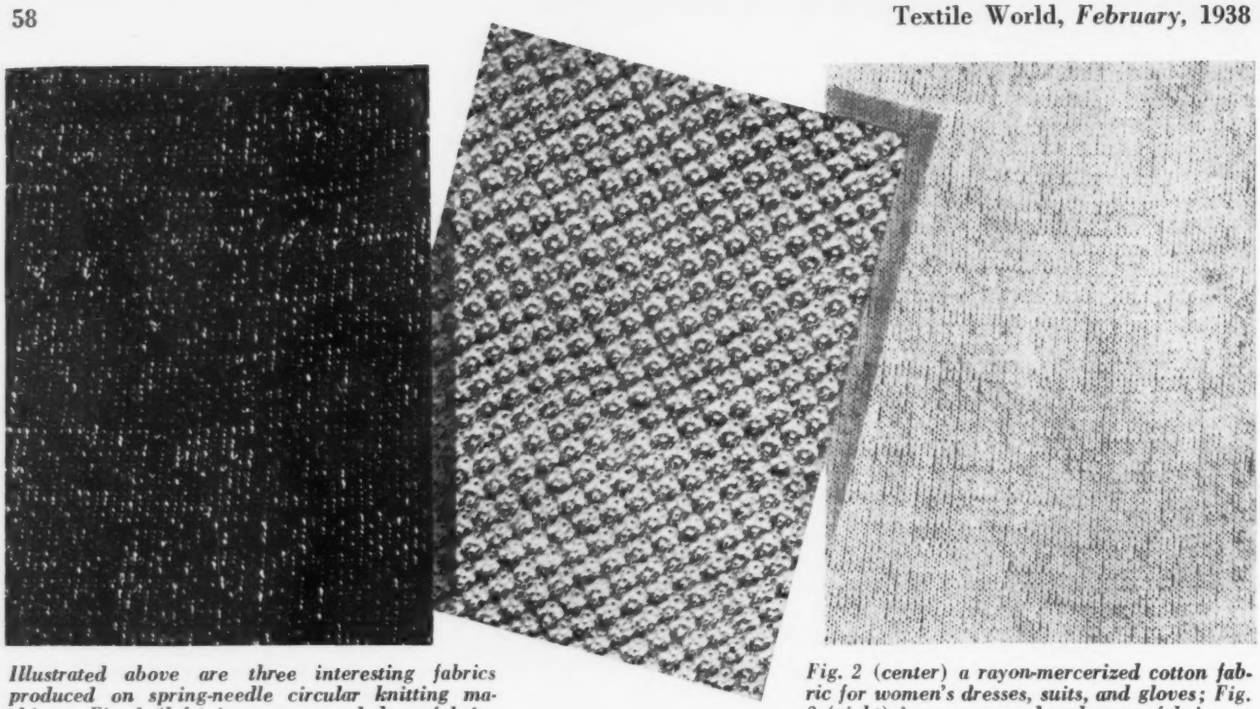
Results Obtained

It would seem from these and tests of other fabrics also treated with the same solution that six washings in a mild soap-water solution, six dry-cleanings, and weather testing for 10 and 30 days had no appreciable effect upon the protection imparted; but that six washings in caustic soap and water, a treatment never followed in handling woolen goods in the Quartermaster Department of the Army, did weaken the protection sufficiently to permit some slight and observable feeding on the nap only.

In the tests described above the cloths were cut into circles approximately 3½ in. in diameter to fit easily into glass petri dishes before the *Anthrenus vorax* larvae were placed on them. Being confined with a single piece of cloth, the insects had no choice but to react to that particular piece of cloth. Further tests were made, however, in which the cloths were cut into half circles that were matched with one receiving the same or other treatment. The amount of feeding was considered an index to any preference the larvae might have for one or the other of the cloths. Results were similar to first series.

In Figs. 5 and 6 are shown comparisons between treated and untreated material from woolen blankets taken from experiments that gave the same excellent protection when 2% of the pentachloro-dioxy-triphenyl-methane-sulphonic-acid solution is used in a hot dyebath; the treated fabric had been sold with a guarantee that if moths caused injury to it a new blanket would be furnished free.

Fig. 4. Army cloth treated as in Fig. 2, then washed six times in caustic soap and water, when subjected to attack of Athrenus vorax *showed slight injury in spots, but nowhere was warp affected*



Illustrated above are three interesting fabrics produced on spring-needle circular knitting machines. Fig. 1 (left) is a rayon-wool dress fabric; Fig. 2 (center) a rayon-mercerized cotton fabric for women's dresses, suits, and gloves; Fig. 3 (right) is a rayon-wool underwear fabric

Knitting Spun Rayon

Blending of spun rayon, wool, and mercerized yarns makes possible interesting effects

By LESLIE MINER

WHEN PRODUCING spring-needle circular-knitted fabrics made from blends of spun rayon, wool, and mercerized cotton yarns, one often finds it difficult to get good, clear cloth. Actually, the most important factors in production of clear fabrics are to have a well-balanced stitch and to have all stitch wheels and pressers adjusted so they are casting off clear stitches. Many times landing wheels are not set in the right position under the pressers, or cast-off or cloth wheels are set too far away from the landers. Machines inaccurately adjusted in any of these particulars will not produce clear fabric. I have always found it a good plan, before running pattern-work of rayon or wool, to put the machines in good adjustment with cotton before attempting to knit the other fibers. This will save money, time, and trouble on the pattern-work.

Fig. 1 illustrates a cloth of the type under discussion. This is a rayon-and-wool fabric, used mostly for dress goods. It is dyed in many shades and, with proper handling in the dyeing department, can be very attractive.

In this particular fabric the wool only is dyed, leaving the rayon in its natural color. A low-luster rayon is used, as this gives a fabric of good appearance, and comes out of the dyebath quite clear.

The fabric is made on a 28-gage, 24-in. cylinder, leaded spring-needle, circular machine using four feeds. The stitch is 35 courses to an inch, before finishing. As far as the size of the cylinder is concerned, the fabric can be made on practically any size on which four feeds can be used, since the pattern does not require cut-pressers. When placing a feed on the machine, we start at the right, and place all parts on to the right.

Detail of Feeds

All four feeds are as follows: 1 clearance wheel; 1 stitch wheel, with a large cloth wheel on this post; 1 presser stand, with a presser guard; 1 stitch wheel, with a large cloth wheel on this post; 1 long presser; 1 landing wheel; and 1 cast-off wheel.

On each feed, yarn on the first switch wheel to the right is one end of 150-den. low-luster spun rayon. On the next stitch wheel a 12 typp (40 cut, 7½ run) wool is used.

Set the stitch at 35 courses per inch on all stitch wheels. Then, set the stitch, on the first stitch wheel carrying a rayon end, at 80 needles to the foot of yarn, and on the first stitch wheel that carries a wool thread, at 76 needles to the foot.

If the stitch wheels carrying the rayon yarns are not properly set in the needles, they have a tendency to make loops on the back of the fabric. Rayon yarn that is too dry, or has been lying around too long without its wrapper, is likely to produce a similar effect. If steam is used, there will be little trouble with the rayon; if the yarn is without steaming, these things will have to be overcome by the knitters; but there have been great quantities of fabrics of this type made without the use of steam. It is of paramount importance to set the stitch so the two yarns blend together, and not to have too much of the rayon showing after the fabric is finished. These results will

be secured, if the settings explained are closely followed.

Fig. 2 is a fabric used for women's dresses, suits, and matching gloves. It is made on a 28-gage, 20-in. cylinder machine, using four feeds. The stitch is 85 needles to the foot of yarn, and there are 1,142 needles in the cylinder. Pattern wheels are blocked up two-in and two-out, which makes a pattern of four. This fabric can be made on any size of cylinder, provided its total number of needles is divisible by four, with two left over. The machine is set up as follows: the first two feeds are plain; yarn used is one end 36/2 mercerized cotton. The third and fourth feeds are pattern, set up two-in and two-out, using a wheel which covers 160 needles each revolution. Two ends of 150-den. dull rayon are used on each feed. To set the wheels, either break or bend a needle in the cylinder and, turning the machine to the third feed, set the wheel on this bent needle, either on the first "out" or the first "in." Then turn the machine to No. 4 feed, and set this wheel in the same manner as No. 3.

Rayon-Wool Combination

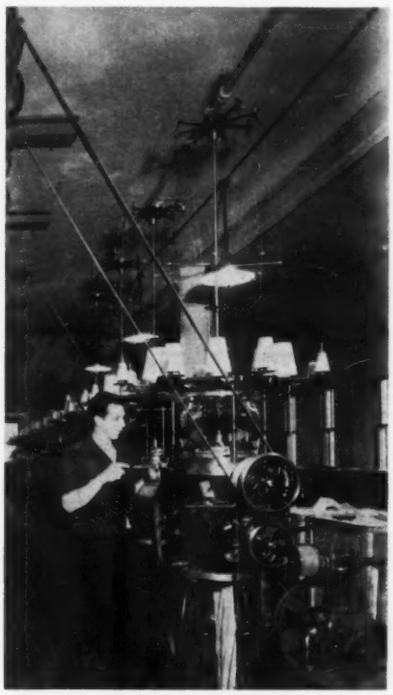
Fig. 3 is a rayon-and-wool underwear fabric. It is made on a 28-gage machine, using four feeds. It can be made on practically any size of cylinder, as there is no pattern wheel. The set-up: all four feeds are plain. Yarn used on No. 1 is one end of 60/1 combed peeler cotton, over one end of 150-den. low-luster rayon. That on No. 2 feed is 60/1 combed peeler cotton, over 28 typp (1/50) worsted, one end of each. Yarn on the third feed is 60/1 combed peeler cotton over 150-den. low-luster rayon. No. 4 carries a 60/1 combed peeler cotton yarn over a 28 typp (1/50) worsted, one end of each. The stitch is 33 courses to the inch.

With this set-up, double-holed guides are used to supply yarn to stitch wheels. On all ends the stitch should be kept set as nearly even as possible, as the evener the yarn is fed on to the needles the smoother the fabric will be.

When knitting rayon, one must provide some means for running the yarn into the beards of the needles, so that the needles will take the yarn in an even, smooth manner. There are many ways of doing this. For any manufacturer making a practice of running rayon through spring-needle machines, installation of a steam system will save many pounds of good yarn that otherwise will be wasted. If steam is not available, cones or bobbins of yarn can be placed in a humidifying room for a few hours before using. Sometimes a little tension placed on the yarn as it enters the needles will hold it in place. Or a little oil on the cones will help.

It is most important, when running rayon, to make sure that the machines are in correct adjustment. Many times, when fabrics are not clear, the blame is laid on the rayon yarns, when the actual fault is with a machine that is out of adjustment, and would not even produce a clear piece of cotton.

Production of clear knitted fabrics depends on proper adjustment of all parts



Sizing Worsted Yarns

for knitting requires oily or waxy emulsion

THE usual method of sizing worsted knitting yarns is to apply the size while the yarn is being coned, if it is a single yarn in natural color or one that has been dyed in the form of top. Ordinarily, sizing of this type is limited to application of an oily or waxy emulsion. If winders having emulsion troughs are used, these troughs are filled with the emulsion of wax or soluble oil. Yarn passes over the roller and is kept in contact with the roller by means of pigtails or thread guides. In this way the yarn takes up the emulsion.

In general, emulsions used are similar to stock lubricants used in emulsified form in the worsted industry. They are usually composed of soluble-base and water-white mineral oils. Several varieties of these oils are on the market and available for mill use.

It is not customary for emulsions for such purposes to contain stiffening agents, for the reason that such stiffening would interfere with the yarn flexibility so necessary for knitting. It is true that use of a stiffening size; i.e., a size containing some adhesive, such as starch, dextrin, or gelatine, will have a tendency to hold extra twist in a yarn and will, in a certain measure, reduce the tendency of highly-twisted yarn to kink on knitting machines. However, it is probable that, if a really sufficient amount of size were added, especially in the case of low-grade yarn, the yarn would be so stiff that it would not knit properly.

Woolen-spun yarns are frequently conditioned, by oiling them, so they will knit better without breakage. This is done in much the same manner as in the case of worsted yarns, except that oil is used in the straight or neat form and not in the form of a water emulsion. For this purpose a pure, water-white mineral oil having a viscosity of approximately 80 sec. at 100° F. is generally employed. In using these straight oils, one must make sure that the arc of contact between the yarn and the roller is such that only a small amount of oil is applied to the yarn. In this method the actual tensile strength of the yarn is not appreciably increased; however, such oiling will increase the elasticity or stretching qualities of the yarn and help to lay the fibers. This, in turn, helps to prevent the yarn from breaking on the knitting machines.

Rejuvenating Older Mills

Clinton and Lydia carry out long-range modernization program

AN OUTSTANDING example of how manufacturing efficiency and working conditions can be greatly improved at relatively low cost by older mills is illustrated in the case of Clinton Cotton Mills and Lydia Cotton Mills, Clinton, S. C. These mills were constructed some 30 years ago, and about 3 years ago it developed that both buildings and machinery would have to have considerable attention if the mills were to remain in competition with newer plants. Realizing this, the management decided to inaugurate a long-range program of revamping, and today the work is well on the way toward completion. Both mill and village improvements are being carried out under the personal direction of W. J. Bailey, president and treasurer; and E. A. Hill, general superintendent — manufacturers of many years' experience. The goal of the program is to reduce manufacturing costs by mechanical improvements and, at the same time, maintain or increase the rate of pay for employees.

An examination of cost sheets showed that perhaps the first and biggest permanent saving could be effected by constructing a power plant large enough to supply both mills. Such a plant was then built—without sparing either expense or effort, as it was estimated that the savings in power cost would pay for the investment in a very few years. Details of this plant, one of the finest in the South, were described in the October, 1934, issue of TEXTILE WORLD, but it would be well to point out that several changes have been made since that time. Perhaps the most important of these was the installation of a new B & W Sterling boiler, which brings potential output to 9,000 hp.

Clinton Mill No. 1

The first step in modernizing Clinton Mill No. 1, after installation of the power plant, was to tear out useless walls, consolidate manufacturing rooms, and—in general—utilize all dead floor space. At the same time, practically all the machinery in the mill was overhauled, and, in many instances, completely rebuilt. Among the physical changes made to the building were elimination of an old ropeway and stairway, and construction of a new elevator shaft to replace the old one. An Otis elevator, which can be made fully automatic, was installed in the new shaft. A dust chimney was added.

The picker room has been completely revamped, and all old machinery thrown out. Two lines of modern one-process Kitson Saco-Lowell pickers have been installed. Eventually, it is planned to construct an entirely new picker room away from the mill.

The card room was enlarged by tearing out a number of unnecessary walls. The additional space made possible installation of 18 Saco-Lowell cards, bringing the total to 60 in this room. All cards were reworked and rearranged. Drawing frames were also rebuilt and rearranged. Installation of 24 additional deliveries of Saco-Lowell drawing was made possible by removing 12 spinning frames from this department and installing them in the spinning room.

All spinning frames were overhauled from top to bottom, which included equipping them with 1 7/16-in. rings, new spindles, 8¾-in. bobbins, etc. All of the 108 frames located here will eventually be changed over to long draft, although only 12 have been so equipped to date. The frames which have been changed over are Whitin; the remainder are Fales & Jenks. All machinery has been rearranged, with filling frames consolidated at one end of the room.

The weave room of Mill No. 1 has a total of 432 looms, of which 50 were recently added. Space for the additional looms was secured by tearing out walls and removing a small starch room and roller shop. All of the looms are Draper's, which have been reworked and equipped to accomodate larger shuttles.

Clinton Mill No. 2

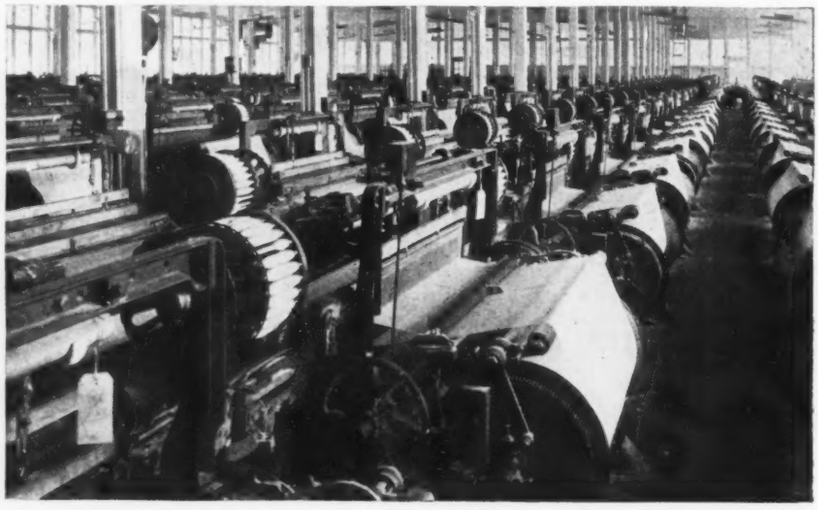
Clinton Mill No. 2, which adjoins Mill No. 1, has been revamped in much the same way as Mill No. 1. The first step was to reorganize the picker room and replace all old equipment with five lines of modern one-process Kitson Saco-Lowell machinery.

The card room was entirely rearranged to give more space, and 40 cards were added, bringing the total to 142. All old drawing frames were rebuilt and 36 deliveries added. Old 6x2½ jack frames were replaced with 18 7x3½ frames.

Spinning frames were overhauled and equipped with new rings, spindles, bobbins, and other parts. The room contains 148 warp frames and 52 filling frames, all of which were rearranged to take advantage of available space. Plans call for changing these frames over to long draft as soon as possible.

Slashing, spooling, and warping for both Mills Nos. 1 and 2 are carried out in Mill No. 2. Barber-Colman spooling and warping equipment in use has been renovated. Later, the slasher room will be rearranged.

Weave room at Lydia has been rearranged and 416 looms have been added. Note mercury-vapor lighting.



Spinning frames at Clinton have been reworked and equipped with $1\frac{7}{16}$-in. rings, new spindles and $8\frac{3}{4}$-in. bobbins. They are being changed over to long draft

A great deal of work was carried out in the weave room. In the first place, additional space was secured by knocking out several partitions and rearranging machinery. A room containing air compressors and humidifier pumps was removed from the mill proper and placed in the newly excavated basement beneath the mill. A dust room in the mill was rebuilt. A laundry was removed from Mill No. 2 and installed in the basement of Mill No. 1. These and other changes made possible the addition of 92 Draper Model-E looms, bringing the total to 1,804 in both plants. All of the looms have been completely rebuilt to accommodate larger shuttles and bobbins.

The cloth room has been rearranged and equipped with three new Hermas shearing machines and Cooper-Hewitt lighting. The room is humidified with American Moistening Co. atomizer equipment. The lighting arrangement was designed to insure perfect inspection and at the same time reduce eyestrain on the part of employees. Minimum handling of the cloth keeps it clean.

The machine shop, which serves both plants, has been expanded and rearranged to give more light and space. All equipment is operated by individual motor drives. A new wood shop and roller shop were constructed.

The filter plant serving Clinton Cotton Mills has been expanded and much new equipment added to insure a sufficient supply of clean pure water for both drinking and process purposes. Most of the equipment was supplied by Hungerford & Terry, Inc. Plans call for eventually extending lines to carry this water to Lydia.

Lydia Cotton Mills

The general program called for Lydia Cotton Mills to be revamped more or less simultaneously with Clinton. The first step was to tear out many old walls and consolidate departments.

The picker room today is considered outstanding among mills of this type. All old machinery was thrown out and replaced with five lines of rebuilt one-process Kitson Saco-Lowell equipment. The set-up includes new conveyors, feeder hoppers, and other parts.

Additional space secured by rearranging the card room made possible installation of 47 more cards, bringing the total to 139. Also, 48 deliveries of drawing were added. Old 6x2½ jack frames were replaced with 29 8x4 Woonsocket frames.

In the spinning room 45 new Whitin long-draft frames are being installed, and 44 Whitin frames are being equipped with long-draft change-over. All old frames were reworked.

The spooling and warping department was revamped, and two new Barber-Colman over-end creels were installed. Speed has been increased from 500 to 600 yd. per min. on warpers. Spoolers have been lengthened to accomodate 120 to 180 spindles. The slashing department was rearranged and one new Cohoes slasher added. A circulating size system equipped with Taylor automatic controls was installed.

The weaving department was expanded to accomodate 416 more Model-E Draper looms, rebuilt completely. The looms, which are all on group drive, were rearranged in a more efficient manner. Cooper-Hewitt lights have been installed generally throughout Lydia, especially in the weave and cloth rooms.

At Lydia Cotton Mills much work was necessary to put the building in first-class condition. In addition to tearing out many walls, a new basement was excavated to give additional space. The tying-in department and wood shop are located there, although most of the space is utilized for storage purposes. The machine shop is located on the first-floor level and has been expanded to some extent. A floor-to-floor elevator was constructed to handle beams. Also, a fully automatic Otis elevator has been installed. A new tower stairway was built, and recently new concrete loading platforms were completed.

Air-Conditioning and Electrification

Several different types of equipment are used in Clinton and Lydia mills for humidifying and otherwise conditioning the air. In the former, American Moistening Co. equipment is used almost exclusively for humidification. This is supplemented with Carrier diffusion-type unit heaters which warm the air in winter and cool it in summer. Inside temperature in departments containing this equipment is said to be 5 to 8°F. lower than outside temperature during the warm months. Foxboro automatic controls are employed to keep conditions properly regulated. Most of the departments at Lydia are humidified by means of American Moistening Co. atomizers. In the No. 1 weave room the pipes are attached to supporting columns which keeps them out of the way, making a much neater-appearing job. Foxboro controls are used here also. The heating and cooling system in No. 1 weave room was furnished by L. J. Wing Mfg. Co. Other rooms are heated by means of steam pipes and radiators.

Electrical wiring equipment at both Clinton and Lydia Mills was revamped and modernized in an effort to reduce power consumption to a minimum. Motors have been rearranged and relocated throughout the mills, especially in the card rooms. Spinning frames are largely driven by individual motors. Looms are on regular group drives, as are machines in the card rooms. Considerable attention is being paid to lighting arrangements, and, as previously mentioned, mercury-vapor lights are in use in the cloth rooms and in some weave sheds. Ceilings have been painted white to give added light on the work. White loom arches reduce shadow.

The villages housing employees of Clinton and Lydia mills are naturally rather old, as both mills were built many years ago. Consequently, there was much work to be done bringing the houses up to date. All houses are being painted and re-roofed where necessary. Water and sanitation systems are being repaired and modernized. Shrubs are being set out in the villages and on the mill grounds in an effort to make the surroundings as cheerful and pleasant as possible.

Full-Fashioned Lisle . . .

Newest women's-hosiery development follows months of experimentation

By MILDRED G. BARNWELL
Executive Assistant, Southern Combed Yarn Spinners Association

ONE OF THE interesting aspects of the opening year in the women's full-fashioned hosiery field has been in the introduction of a high-style line of lisle hosiery. This innovation, which already has received such approval as to offer real prospects for its commercial success, was developed after months of technical experiment and market study.

Over a year ago the question was asked: "Why is it that a well-dressed woman who considers her wardrobe unstocked without a complete change of costume, including dress, hat, shoes, and bag, for her various activities has so few types of hose from which to draw?" That question started the minds of stylists to working along lines of fashion development in the hosiery field, in an effort to give the discriminating dresser an appropriate hose for active and spectator sports, heavy-duty street and business wear. Early last March, with Dave Young, creator of the grenadine hose, as designer, a rented machine or two, and several types of mercerized and gassed combed peeler yarn, the Durene Association of America undertook to produce a remedy for the inappropriate use of silk hose by American women.

In mid-November, 1937, the first acceptable design was placed on the market through a promotional program inaugurated in Peck & Peck's 25 stores. To their charge account customers this retail chain sent a pair of the hose, and a questionnaire as to the desirability of including lisle hose in a woman's hosiery wardrobe. Responses to the questionnaire were nearly 90% in the affirmative and gave impetus to further merchandising work on sheer lisle as an important 1938 fashion factor.

There are now 55 hosiery manufacturers working on lisle full-fashioned numbers as compared to only five at beginning of the year. It is found that there are real possibilities in the so far unexplored field of hosiery design and an untapped market for properly styled, lisle full-fashioned hose.

There are the half million nurses and doctor's attendants who want serviceable but styled white hose which will not yellow as silk does when washed. There is the student class: Junior High's who in their early teens yearn for grown-up looking legs, but whose mothers frown upon their entering the silk-stocking class—both from appropriate and economic angles; there are the High School and Collegiates, proper age for silk hose, but not quite so formal-minded during work hours. There is the high-style bracket of mature sportswomen who know they look foolish in anklets and feel that they do in dressy hose while participating in or watching sporting events.

Lisle Hose Styles

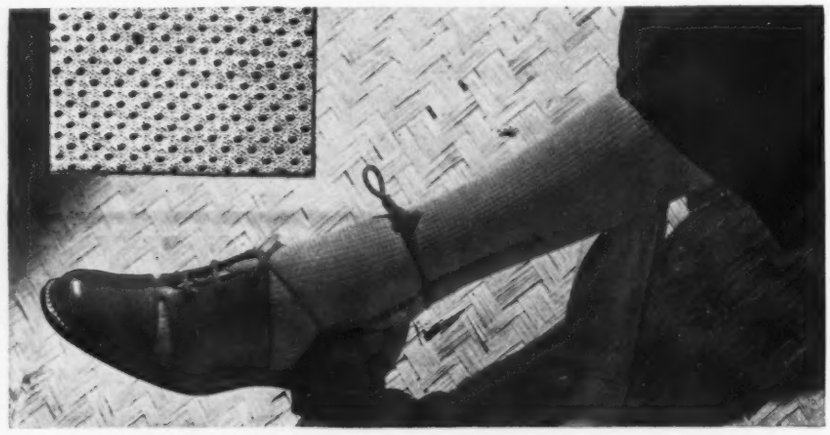
Lisle hose styling developments to date consist of an attractive mesh of 90/2 or 120/2 yarn, which looks very smart worn with street shoes; a vertical stripe, with or without clock, in both 90/2 and 120/2 yarn, which is very becoming to the larger leg; a pattern in 90/2 or 120/2 yarn, in which is detected a slight horizontal stripe for the ultra slender leg. These have a color range in all the usual hosiery shades, with sports emphasis placed on the Chinese Red and Dartmouth Green; and, as a gallant gesture to summer, pastel shades, such as waltz blue, rose, bouquet yellow, nacre green, coral, and tropic straw are offered. The pastels promise to be a revolutionary factor in summer hosiery and can be worn with white sandals in calf or suede, white buck or linen pumps, or white shoes trimmed with tan, Paris blue, or a bright color to be correct for beach, resort, and general summer wear. Sandal type slippers of strong multicolored bands will be effective as a pick-up for pastel hosiery for summer spectator sportswear, and printed linen or garbardine sandals with white background and bright multicolored florals are suggested for use with the pastel shades for dressy summer afternoon wear.

An especially strong field in the lisle hose for summer wear will probably be the knee-length type in the usual run of tans and suntans, as well as the pastels, for they may replace the bare leg, as well as the ankle sock, as being more graceful.

A follow-up in the pastel development may be gloves of the same shade and yarn, to match the hose.

Although to date only 90/2s and 120/2s have been used by the hosiery knitters, it is reported that some are experimenting with 140/2s and 160/2s; however, it is hardly to be believed that numbers of such fine count will be found practical in actual use. Behind this new market lie prospects of a greatly increased yarn demand. If anticipated demand for the finer numbers opens up, it will mean added production of combed peeler yarn which should increase present operating time for the combed yarn mills to 1937's first six months average of 75 hours weekly.

Lisle novelty hose with inset showing stitch



Split-Foot Hosiery

Novelty effects obtained by cross-dyeing and other economical methods

By I. C. MOORE

RECENTLY the question was raised as to why socks made on the split-foot machine were not knit with novelty effects. The inquirer stated that he wears split-foot socks because they are more comfortable and last longer than other types; but he intimated that he would like them better if they were available in novelty styles. This prompted the writer to prepare the following article, showing how novelty effects can be obtained rapidly and economically on this type of hose.

With the split-foot machine, it is possible to knit the high-spliced heel, the sole, and the toe from mercerized or unmercerized cotton yarn, and to use silk or rayon for the rest of the sock, including the upper part of the foot. This is accomplished by giving the cylinder a rotary reciprocal motion from the high-spliced heel all the way down to the completion of the toe. The heel and toe pockets, of course, are knit in the same manner as would be the case on any other circular machine.

When the foot proper is being made, two yarn fingers are in operation. One works the silk or rayon on the back half of the needle, and the other works the mercerized yarn on the front half of the needle. In this way, the upper part of the foot is knit of silk or rayon, as is the leg, while the lower part of the foot, where abrasion and friction are most likely to occur, is knit of the more durable yarn.

Owing to the loss in knitting speed, which is necessary for the reciprocating motion while making the foot, production on this machine is somewhat less than on other types of transfer machines. All things being equal, the split-foot machine will produce about two-thirds as many dozens as will the regular machine. On the other hand, the loss of production is offset to a considerable extent by the saving of yarn, which otherwise would be lost in float threads.

Method of Joining

The method of joining the two yarns during the knitting of the foot is worthy of note. Where the two materials are interlaced, they appear as a flat, uniform seam running along both sides of the foot. The absence of fuzzy threads showing through the silk is, naturally, a distinct advantage.

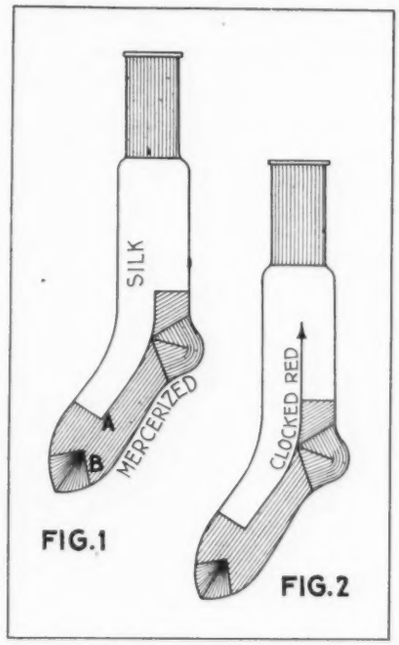


Fig. 1. Shaded and unshaded portions of split-foot sock can be dyed in contrasting colors. Fig. 2. An embroidered design can be added

Fortunately, the ordinary street shoe for men covers most of the silk or rayon of the foot. Therefore, it is not necessary to extend the split all the way to the toe. A slight increase in production and a small saving in silk can be effected by resuming circular knitting about halfway down the foot, and continuing with the more durable yarn to the toe, where the reciprocating motion is again resumed (See Fig. 1 from *A* to *B*). This construction not only makes possible a higher knitting speed and saving of silk, but also makes a more durable sock, as the portion from *A* to *B*, like the toe, is subjected to much friction from the shoe. Inasmuch as the split-foot machine knits the foot with an oscillating motion, novelty effects by the reverse-plating and the wrap-stitch methods cannot be completed; consequently they are never attempted on this machine. However, split-foot hosiery can be made most attractive by clocking on a separate machine, or by cross-dyeing.

Embroidered Design

A combination color design can be produced by using silk for the leg and upper portion of the foot, and mercerized yarn for the ribbed top, high-spliced heel, sole, heel, and toe (indicated by the shaded areas in Fig. 1). The sock can then be cross-dyed; for example, the cotton can be dyed black and the silk dyed blue. If it is desired to add an embroidered design, as illustrated in Fig. 2, this can be done on two separate sewing machines—an overseaming machine for producing the stem of the arrow, and a shellstitch machine for working in the point or head. A red or a gold arrow would blend very well with the cross-dye colors just mentioned.

In another style, substitution of a mercerized cotton and spun acetate yarn for silk in the leg and upper part of the foot will give a wool-like appearance. Due to the tendency of acetate staple to attract static electricity, the fibers do not lie together so compactly as other synthetic textile fibers, but seem to repel one another, leaving numerous air cells in the yarn.

Therefore, socks made from acetate staple have good thermal-insulating qualities, retaining the warmth of the body. The parts of the sock containing cotton can be dyed black with direct colors, leaving the acetate fibers undyed and giving the mercerized-acetate blend a dappled gray tone.

Women's Hosiery

In one style of women's hosiery which has come into vogue recently the leg is dyed in some light shade, and the back seam, heel, and sole are dyed black. This style of hosiery can be made on a split-foot machine by using acetate for the leg, and lisle for the parts which are to be dyed black. The contrasting colors can be produced by cross-dyeing in a single bath. Of course, the foot must be of the cradle-sole construction, since with some styles of women's shoes, a large portion of the instep is exposed to view.

Save the B. T. U's.

Recovery of waste heat from spent liquors effects worth-while dyeing economies

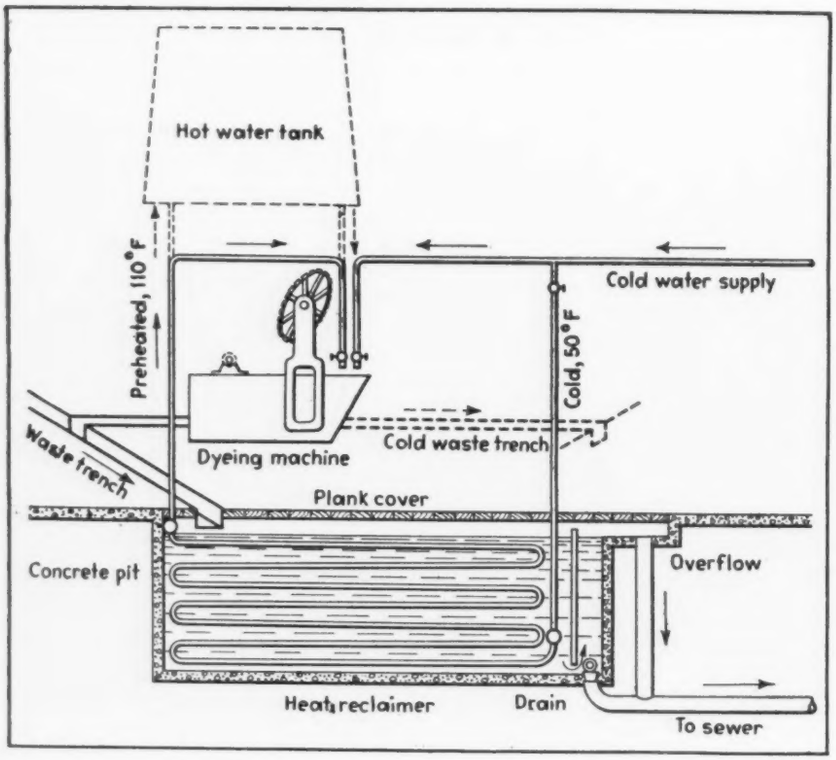
By ANDREW A. BATO, M. E.
Consulting Engineer, East Orange, N. J.

IN the January issue it was pointed out that the starting of the dyeing operation at as high a temperature as possible is of the utmost importance from the point of view of heat and power economy, especially when it involves the use of a hot water supply system either for ironing out load peaks or for utilizing exhaust steam, or both. The importance of a favorable heat and power balance was also discussed. Frequently the heat and power balance is bettered still further by the addition of a heat exchanger by means of which the heat of the spent dye liquor is utilized to preheat cold, clean water before the spent dye is let into the sewer. The simplest form of the heat reclaimer or preheater is what is generally known as the open type. It consists essentially of a tank, usually of concrete and set below the level of the dyehouse floor, in which the hot spent dye is collected. In the tank is a specially designed tubular heat exchanger through which the clean, cold water flows, absorbing heat from the hot, spent liquor.

This principle can be applied in a number of ways to suit special conditions. For instance if most of the liquid—spent dye, wash water, etc.—that flows into the trench is hot, it is not worth while to separate the hot waste from the cold. If most of the waste is cold, good results can be obtained only if every dyeing machine, vat, etc., has two outlets, one for the hot liquor and one for cold. In this case there should be two trench systems in the floor—one for the cold liquor discharging directly into the sewer, and the other into the heat reclaimer pit and thence into the sewer.

The preheated water can be led to the dyeing machines through the old cold-water pipes and be used for all the baths, or there can be two separate systems—one for cold, and one for preheated water. The latter system is preferable. Another possible arrangement is for the preheated water to be led into a hot water storage tank and brought up to still higher temperature by means of exhaust or live steam.

Fig. 1. Diagram showing reclaimer or preheater for recovering waste heat from hot, spent dye liquors.



To illustrate the results that may be expected, let us consider a favorable case. Assume that the spent dye liquor is drained from the dyeing machine at a temperature of 210° F. and that it is separated from the cold wash water. With an allowance of 30° for cooling in the hot-water trench or drain pipe, this spent dye is likely to reach the heat reclaimer or preheater at a temperature of 180° F. The average temperature of cold city or well water entering the heat reclaimer can be assumed to be 50° F. With properly designed counterflow heat exchangers the temperature of the hot water, in this case 180° F., can be easily approached within 15° or less by the preheated water.

However, it is not always true economy to attempt to approach the temperature of the heating waste too closely, as the additional investment may not be justified by the fuel savings. The reason for this is that the temperature rise in the lower ranges of from say 50 to 60° F. requires much less coil surface than the same rise at the 155 to 165° level. The economic limit of preheating will depend on the cost of installed coil surface and the cost of fuel. To be on the safe side, let us assume in this case that the cold water will be brought up to within 30° of the temperature of the heating water, or to 150° F., and will flow into the hot water supply tank, or the dyeing machine at this temperature.

Without the heat reclaimer the dyeing water had to be heated from 50 to 210° F., a temperature rise of 160°, but with the preheater installed it is necessary to raise the temperature only from 150 to 210° F., or 60°, which is 62% less than 160° and requires 62% less steam and fuel for heating the dyeing water. Let us assume that 75% of the total steam used in the dyehouse is for the purpose of heating the dyeing water, the rest is used for keeping it at the boil, drying, finishing, etc. This means that the saving will

amount to 62% of 75%, equaling 46.5% of the total fuel bill. This, in the writer's opinion, is a very favorable case, whereas savings of from 25 to 30% are quite common.

The practice of "flushing" frequently lowers the efficiency of the heat reclaimer. In some cases, for instance in plants where rayon is dyed, cold water is introduced at the end of a dyeing operation before the hot liquor has been discharged from the bath. The object of this method of operation is twofold: first, to float the scum from the top of the bath and, second, to cool the batch gradually down to about 65° F. The waste overflows at the rim of the dyeing machine, first the hot water and then gradually cooler as the overflow continues. To remedy this situation a thermostatic valve might be placed in the discharge lines so arranged that the hot waste water down to a predetermined temperature, say 90° F., would go into the heat reclaimer, and the colder wastes directly into the sewer. Such a valve was described in *Power*, May, 1937 issue, in an article by Claus Levinson.

Results Justify Expense

It is true that it is an expensive and complicated job to install a heat reclaimer with provision of two outlets for each dyeing machine, a second system of trenches, and duplicate water supply piping. The results, however, frequently justify the additional expense.

To illustrate; suppose the steam demand of a dyehouse is increasing at such a rate that it appears advisable to double the boiler capacity. An alternate scheme would be to install a heat reclaimer. The latter may cost more than a new boiler. Also assume that it is the policy of the management to adopt an improvement provided it pays for itself in three years. This means that the heat reclaimer or preheater should be installed instead of the boiler, provided it does not cost more than the boiler plus three years fuel saving. With the figures mentioned above, the saving should be calculated on the basis of: Boiler Cost + (46.5 × 3), or 139.5% of the annual fuel bill. Conditions vary considerably in individual cases, but there will be hardly a case in which the heat reclaimer will not cost less than the boiler and three years' fuel savings.

Let us consider the selection of the prime mover from the viewpoint of the heat and power balance. Naturally there are instances in which the new prime mover is installed before the heat reclaimer or preheater. In such cases the possible future installation of the reclaimer should be borne in mind, because the two are closely related, and selection of an engine that is not sufficiently economical may bar partly or totally any further economies that might accrue from a heat reclaimer installation.

Suppose a steam turbine operating at a comparatively low pressure of, say, 125 lb., is installed and it is so uneconomical that the exhaust steam is sufficient to heat nearly all the dyeing water. In such a case very little live steam will be required to complete the heating of the dyeing water. Now all the heat reclaimer can do is to eliminate the live steam, but not the exhaust steam, because the quantity of exhaust steam will depend on the number of kw.-hr. needed, and on the economy of the turbine. If in this case a full-size heat reclaimer should be installed, the result would be that most of the exhaust steam would be discharged directly to the atmosphere; in other words, what would be saved from the gutter would be wasted in air. If, however, a uniflow engine were installed, operating at, say, 250 lb., superheated, the condition would be quite different. Such an engine, as compared with the turbine, will use probably less than half the steam and furnish, for heating, about one-half as much exhaust. This leaves an adequate amount of heating to be done by the heat reclaimer.

Just what the proper combination should be frequently depends on whether the plant in question is a dyehouse only, whether it does printing as well as dyeing, or whether it is connected with a knitting, spinning, or weaving mill. The most favorable case, from the viewpoint of heat and power economy, is that of the dyehouse operating as a unit. Because the amount of electrical or mechanical power required is comparatively small in proportion to the amount of water to be heated, a low-priced prime mover and a heat reclaimer or preheater can be installed and all the power, generated will be used, as well as all the exhaust steam.

In some cases it will be impossible to generate all the power required and at the same time make full use of all the exhaust steam and the offfall heat contained in spent dye liquors. In such cases it may be more economical to operate a portion of the power plant condensing, perhaps by means of a bleeder-type turbine, or to install a diesel engine, with or without utilizing the heat of the jacket water and exhaust gases. There is also the possibility of purchasing additional power where rates are favorable. The final decision should be preceded by careful studies and surveys.

Finally it should be emphasized again that all these economies depend largely on the possibility of starting the dyeing operation at the highest possible temperature. The writer has attempted to demonstrate that it is well worth while for the dyehouse owners, as well as for the manufacturers of dyes, to develop such methods, and that it will pay to introduce these methods even if the dyes should cost more, as the additional expense may be recovered several times over in savings on fuel cost.

Fig. 2. Installation of preheater outside of dyehouse in a southern textile mill. Covers removed to show tubular heat exchanger.
Whitlock Coil Pipe Co.

Loomfixers' Manual

COTTON SECTION — *Chapter III*

By IVAR MOBERG

Loom Driving and Braking Motions

DRIVING and braking motions have an important bearing on the amount and quality of loom production, as well as on the durability of the loom itself. A jumpy and unsteady drive and/or an ineffective and undependable brake are certain sources of trouble, resulting in excessive loom breakage and increased maintenance costs.

The drive of a loom is probably one of the most fluctuating drives of any machine. Power consumption is irregular, with peak loads at pick and beat-up; at other points in the cycle consumption of power is negligible. In fact, the driving motion will at some points in the cycle act as a braking power, rather than a driving power. This is likely to be the case in dobby weaving, in which a large number of harnesses are lifted under spring tension and then dropped to the bottom shed while a small number of harnesses are lifted for the next pick. In certain types of jacquard fabrics a similar condition is encountered.

Types of Loom Drives

There are three types of loom drives: (1) belt drive with tight and loose pulley, (2) belt drive with clutch, (3) individual-motor drive. The first of these—tight and loose pulley belt drive—is fast going out of existence, as it is not well suited to loom driving. The main objection to the tight and loose pulley belt drive is that it is slow in starting and stopping. In the first case, if the lay is not pushed well back before power is applied, this type of drive has a tendency to cause the loom to bang-off in starting. In the second instance, too great a strain is placed on the protecting motion when, for some reason, the loom bangs off. The tight-and-loose-pulley belt drive also causes the loom to overrun when it is stopped by either the warp or filling stop motion, as a certain amount of time is required to move the belt completely from one pulley to the other. Further, due to the irregular power consumption of the loom, the belt has a tendency to flap; this reduces adhesion and causes slippage.

With any type of belt drive main shaft lines must not be too long, as the looms farthest away from the source of power will run very unsteadily and frequently bang off. This is caused by torsion and backlash in the long shaft lines, due to the fluctuating power consumption of the looms. The power application on a long shaft should preferably be in the center of the shaft, rather than at one end. Better still is to cut the shaft and use two smaller motors instead of one larger one. Some mills overcome the torsion and backlash of a long shaft line by applying a flywheel at the ends of the shaft. This makes the power transmission more steady. Other mills use several counter belts on a long shaft line, but this, in the writer's opinion is poor practice, since variation in pulley sizes causes some of the counter belts to drag.

Since there are many looms throughout the country which still use a tight and loose pulley drive, it may be well briefly to touch on this subject as to setting and adjustment.

Fig. C-19 shows a Draper drive of this type. This drive is simple. As far as the mechanical setting of the motion is concerned, it does not require much explanation. The shipper handle is pivoted to the shipper-handle bracket; tension of the shipper spring pulls the handle to the "Off" position as soon as the handle is pushed away from the catch in the shipper block. This tension must be adjusted so that it will move the belt from the tight to the loose pulley as quickly as possible when the loom is stopped. It is advisable to place a piece of leather or rubber between the shipper handle and the slot in the shipper-handle block, to absorb the shock when the shipper handle is thrown to the "Off" position. The belt guide should be set as close as possible to the pulleys, so that it can move the belt quickly from one pulley to the other, and also to prevent the belt from turning over on the pulley when the loom is started or stopped. The shipper level must turn freely on its bushing and its height must be so adjusted that the end in the recess of the shipper handle will not bind either in the "Off" or "On" position of the handle. Lateral adjustment of the shipper-lever bracket should be such that the shipper-handle key touches squarely on the ball-shaped end of the shipper lever. If the key touches inside the ball-shaped end of the shipper lever, it will bind when the handle is pulled; if it touches too far out on the end, the lever is likely to slip out of control of the handle. The belt guide should be positioned on the shipper sleeve so that it will move the belt fully over on the loose pulley when the loom is stopped. Should the guide be out of line, so that it moves the belt too far over on the loose pulley, it will not move the belt all the way over on the tight pulley when the loom is running. This will cause the belt to slip, since a part of it is always on the loose pulley and no power will be transmitted from that portion. The full width of the belt must be on the tight pulley, when the loom is running, to get maximum power transmission from the belt.

Friction Belt Drive

This type of loom drive is a decided improvement over the tight-and-loose-pulley drive. Its main advantage is that the belt is always in position to give maximum power transmission instantly when the shipper handle is pulled. It permits both quick starting and stopping.

Friction belt drive is generally understood to mean power transmission through clutches, of which there are several types such as the plate clutch, the internal-expanding clutch, the multiple-disk clutch, and the cone clutch. Of these, the plate and internal-expanding clutches are by far the most universally used. The plate type is now almost exclusively made with a cork insert, which gives a greater degree of friction than either leather or cork coverings, since the latter two have a tendency to form bulges or lumps if they are not applied expertly. It is evident that a bulge or lump in the plate covering will decrease the amount of friction surface and consequently render slippage more likely. To avoid slippage it is necessary to apply additional pressure. This, of course, will give a greater end thrust to the shaft. If leather or cork covering is used, it is advisable to put the plate in the lathe

and buff it down so that a truly smooth friction surface is obtained. Few mills will go to this expense; nevertheless, it is advisable in order to make the drive efficient. Leather coverings for friction disks when they are old, often become sticky from oil and dirt. This causes them to stick to the other disk. In such cases it is often difficult to get release, and the loom will not stop instantly when the shipper handle is thrown off. A remedy is to wash the covering with gasoline or some other oil remover or cleaning fluid. Better procedure, however, is to replace the old covering with new leather.

Cork inserts are now widely used on loom frictions for power transmission. When pressure is applied, the longer cork inserts will be compressed or flattened out so that the shorter corks will also come into contact with the friction disk. Thus, good friction will be obtained, even though the cork inserts vary slightly in length. Of course, they should be of the same length as far as is practically possible, but there is no need of buffing them down to uniform length. Another advantage of cork inserts is that corks do not readily absorb oil, grease, and dirt; but remain clean until they are worn down to such an extent it is advisable to replace them with new ones. Good, efficient friction can be had with very little pressure. In adjusting the friction it is necessary only to make sure, by tightening all bolts and screws, that all parts connected with the driving mechanism are firmly held in place. It is paramount for good friction drive to eliminate all torsion, twist, and play when pressure is applied. To adjust pressure, loosen the friction until it is almost free, with the shipper handle in the "On" position. (On some looms this is done simply by moving the shipper-lever stand farther out, or farther away, from the friction disk. On other looms it is accomplished by screwing out the adjustment screw in the shipper-lever casting.) Then, increase the pressure slowly, until there is exactly enough friction to stop the pulley with the shipper handle in the "On" position. This is done by gradually moving the shipper-lever stand nearer to the friction disk or, on some looms, by screwing in the adjustment screw in the same stand.

The friction is now sufficient to transmit all the power the belt can give. Any added pressure will result in increased end thrust of the shaft. This may cause hot running boxes and friction collars, and in many cases the speed of the loom will be lower owing to the additional consumption of power.

Loom Belts

It may be appropriate here briefly to touch upon the subject of belting for the two drives described above.

In selecting the proper belt for a loom, the extremely variable power consumption of this machine should be kept in mind. A belt that will give maximum power transmission and durability, with minimum stretch and tension, should be selected. Since pulleys on the main shaft usually are small in diameter, an extra-heavy, single leather belt is preferable to a double belt. The belt should be as wide as the pulleys will take, minus a certain safety margin so that the belt will not run over the edges of the pulley. This safety margin should be approximately ¼ in. on each edge of the belt. For instance, if a pulley has a face of 2½ in., belt width should not exceed 2 in. This will make certain the belt will not go over the edges of the pulley.

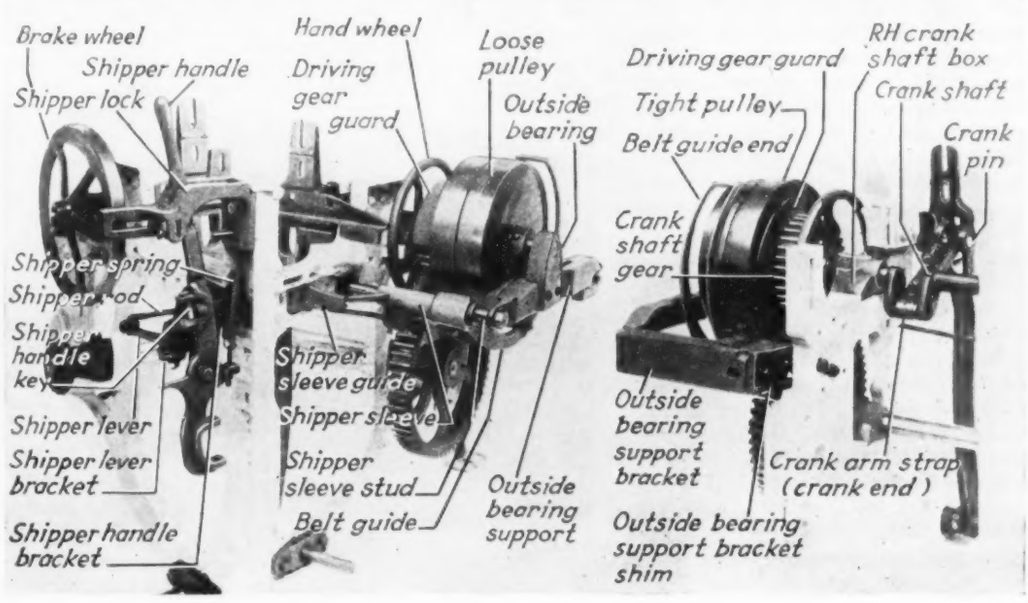
The smooth, or grain, side of a belt should always be on the pulley, as it will transmit more power, is less likely to crack, and will preserve longer the strongest part of the belt, which is about one-third in from the flesh side. Single belts should be placed on pulleys in such a manner that the inside points of their laps will run against the pulleys. Since there is always a certain amount of slippage of the belt on the pulley, it is obvious the action of the pulley will tend to iron or smooth out lap-joints. Outside joints, running with the direction of the belt, are also much less likely to be opened by atmospheric pressure and/or belt guides or other objects against which the belt slaps.

Belt ends should be perfectly square before clasps are driven through. Never cut ends in a hit or miss fashion; always use a square. Harmful dressings, such as soap, rosin, whiting, soap-paste, talc, etc., should never be used on belts. Keep belts clean and apply good belt dressing, sparingly, if needed. Some loom-fixers prefer lacing to clasp fastenings, but lacing requires, of course, more time for joining the belt ends. If clasp fastenings are used, never flatten them; they should always be slightly curved to conform to the curvature of the smallest pulley.

For belt driving it is essential that the looms be carefully lined up with the shafting. If this is not done belts have a tendency to run over pulley edges or to "hang" on belt guides. Both of these conditions are undesirable. The principal difficulty with belt drive is that belts have a tendency to flap. This transmits to looms an uneven, choppy motion and often causes them to bang off. A cross belt will always transmit more power with less trouble than an open belt. This is due to the larger contact surface of the pulley which is presented to the cross belt.

Fig. C-19. Draper Corp. tight and loose pulley loom drive

Copyright, 1932, Draper Corp., Hopedale, Mass.



Loomfixers' Manual

WOOL SECTION—*Chapter III (Continued)*

By BENJAMIN F. HAYES

Head Motions

TIMING PINS have an important bearing, not always recognized, on the accurate and efficient functioning of woolen looms. Some loomfixers, particularly those older men who received their training in days before looms were equipped with timing pins, still have the habit of cutting these pins out. This is neither necessary nor desirable: the timing pins are correctly placed and should never be removed.

Fig. W7 shows plainly the cylinder-shaft gear and chain-shaft gear. The manner in which timing pins and slotted teeth mate with each other is illustrated in Fig. W4B (TEXTILE WORLD, December, 1937, issue). The smaller gear in Fig. W4B is the same as the inside gear on the end of the cylinder shaft. The chain-shaft gear meshes both with this gear and the inside gear immediately above it. Pins in the chain-shaft gear must mate with the slotted tooth in each of the smaller gears.

Retiming Head Motion

At times pattern chains get caught, and the large gear on the end of the chain shaft will slip, throwing the head motion out of time. To retime the motion, loosen the chain-shaft gear setscrews and turn the gear to the correct position. There are marks on the face of the hub of this gear which make it easy to get the proper position without the necessity of cutting out the timing pins.

However, if there are no pins in the timing gears, we must time the gears to each other and to the lock-knife cam. The gears must be so timed that the pattern chain will have made the pattern, by raising or dropping vibrators, just before the lock knife enters between the vibrators. At the same time, the lock knife must always be in between the vibrators before the harness cylinders connect with the raised or lowered vibrator gears.

Having thus decided on the timing which will give best results, it is now possible to proceed toward obtaining the desired timing. First, take off the collar which holds the reversing key in position; then remove both timing gears. When these are off, turn the head motion by hand until the lock-knife finger is in the middle of the high part of the lock-knife cam. Now, holding this position, turn the pattern chain forward until a dropping vibrator meets with a rising one. At this point, replace the gears.

Of course, head motions must have the same time in both directions. To check up on this, first turn the motion forward until the lock-knife finger leaves the cam and allows the lock knife to pass between the vibrators; then turn the motion backward until the lock-knife finger leaves the opposite side of the cam, making sure the time is the same in both directions.

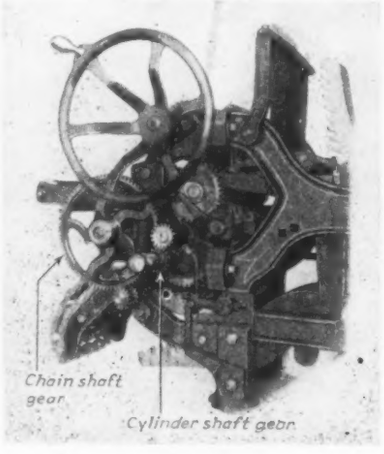
Placement of Gears

It should be noted that these timing gears go on their shafts in only one direction. The inside half of the lower gear drives the pattern chain forward, and the outside half of the lower gear drives the reverse motion. Between the halves of the gear is a neutral position for the driving key. This allows both driver and reverser to be placed in neutral when it is desired to place a new pattern chain on a loom, or to make other similar changes or adjustments.

If, after timing, the lock knife is found to be passing between the forward point of the vibrator before the pattern has been formed, or before the vibrators have moved enough to give clear passage to the lock knife, the timing gears may have to be placed either one tooth earlier or later, since the lock knife must pass between the forward points of the vibrator just as soon as clear passage is made for it.

Fig. W7—Front side view of an Intermediate Knowles Head (Guards removed)

Courtesy Crompton & Knowles Loom Works



When it is finally certain that the head motion is timed correctly, make a mark on the face of the end of the pattern chain shaft and a similar mark on the face of the chain-shaft gear. Then, if at any time the pattern chain becomes caught, the motion can be re-timed simply by loosening two setscrews, setting gear and shaft so their marks coincide, and tightening the setscrews again.

A number of older looms use only one soft-point setscrew for fastening the chain-shaft gear on the chain shaft. This soft-point screw sets into a hole in the shaft and, if the pattern chain becomes caught, will slip away, allowing the chain gear to turn on its shaft and thus avoiding any breakage of gear or cylinder. When re-timing head motions of this type it is of great importance that a soft-point, and not an ordinary setscrew be used to replace the one worn away; otherwise great damage may result if and when the pattern chain again becomes caught.

In later looms, two oval-pointed setscrews were used in place of the single one mentioned above. Under each point there was a recessed spot on the shaft. However, it was found that this arrangement also was likely to cause a considerable amount of trouble; consequently, in the latest-type head motion the chain-shaft gear is bored out to take a split bushing. In this type the two setscrews, instead of pressing against the end of the chain shaft, press against the bushing, which in turn presses upon the shaft. Hence, if the chain jams, the bushing will slip on the shaft and the screws will not dig into the shaft and score it, as they formerly did.

Mr. Hayes' discussion of woolen loom head motions will be continued in an early issue. Subjects discussed thus far include bevel gears, vibrator gears, timing gears, cylinders, combs, and lock knives. Future instalments will cover harness-strap sheaves, setting of boxes, chains, and loom oiling.—Editor.

Dirty Colors in Printing

Can be avoided only by constant vigilance in color shop and print room

By WILLIAM PAZ BRUNSON

WHEN the printer speaks of a dirty color, he refers to one which has lost its true shade by the introduction of a small quantity of another color into it. Obviously lighter shades are more readily affected than darker shades. If we are matching a yellow shade, we do not want the first yard of the run to be a true yellow and the last one a gold or light orange. But a small amount of red going into the yellow box "on the run" could easily cause this. While the resulting color would not appear dirty alone, it would be dirty as compared to the original shade. Red and yellow are both primary colors, and the combination of the two is a simple one. However, a great many of the secondary and tertiary colors actually look dirty in the true sense of the word when any other color is added to them.

Colors for the printing machine are prepared in tubs, barrels, or bins. As these containers cannot always be used for the same color, it is necessary to wash them thoroughly after using. It is evident that a light yellowish green shade would be ruined if it were made in a bin which had been used for brown and which had not been thoroughly washed. In some cases, where several different types of colors are used, it is necessary to clean the vessels with chemicals.

The boxes and furnishers of the printing machine also call for close attention. If the box and furnisher are not clean, the color that goes into that box is doomed at the start to be dirty.

Arrangement of Rollers

Before the rollers are put into a printing machine the pattern should be carefully examined by the colorist and the rollers marked in the order he wishes them run. That is, for a given combination, he might indicate that the yellow runs first; green, second; navy, third; and the blue, fourth.

In some cases it is impossible to arrange the order of the rollers so that all the colors will stay clean. If this is true, the rollers should be so arranged that only one color will get dirty.

In the combination mentioned above, as the cloth first passes under the green roller the green is printed on it. A few inches further on this same place in the cloth passes under the orange roller.

Since it only takes a second or so for the cloth to pass from the green roller to the orange roller, it is impossible for the green to dry before the orange roller passes over it. In this way the orange roller, on the unengraved portions, picks up a small amount of the green color and carries into the orange box. As the machine continues running, the concentration of the green in the orange box becomes higher. Then we have a dirty orange.

After noting how many yards the orange will run until it becomes noticeably dirty, one can determine whether it will be cheaper to scrape the orange to eliminate this condition, or to put in a gum roller.

Gum Roller Used

A gum roller is a plain, smooth roller of the same circumference as the other rollers in the machine, but with no engraving on it. This roller is placed in the machine directly in front of the roller which carries the color that is getting dirty. The box for this roller is filled with a mixture of gum and water.

As was shown, the orange roller picked up the green color on its unengraved portions. Therefore, the gum roller picks up the color over its entire surface. This removes practically all of the color that is "standing" on the surface of the cloth, and there is very little green free to be picked up by the orange roller.

In the event the orange does not get dirty often enough to warrant putting in a gum roller, it is necessary to scrape the orange as often as the shader directs. That is, after running a certain number of yards, the printer must stop the machine and remove all the color from the orange box. This color is put in a separate container and labeled "scrapings." The orange box is then refilled with fresh color and the machine started. In many cases it may be found necessary to scrape several colors.

At other times it is wise to wash the box rather than scrape it, or at least to wash it occasionally. This is done to remove the color from the furnisher, as it cannot all be scraped off of the furnisher.

Lint Doctor

In rare cases rings or other marks are found on the roller too near the end to show in the actual printing. If these marks extend far enough in on the roller to touch the furnisher, they pick up a great deal of color and deposit it on the back gray or blanket, forming what is known as a "carry-over." The color which is carried over on the back gray or blanket is taken off by the next roller that it contacts. In this way a color can get very dirty in a short time. In some cases, where the marks are on the last roller printing, the color will be carried around on the blanket and taken off by the No. 1 roller, causing the color running on that roller to get dirty. If a "carry-over" cannot be checked by mechanical adjustment of the box and furnisher or by filing down the end of the roller, a lint doctor is usually required. This doctor is so placed on the roller that it will clean the roller as it leaves the cloth, thus preventing the color from being carried into the box.

Even Filling Necessary

If a box is filled from the center every time, the sides will tend to get dirty. Likewise, if it is filled from one side all of the time, the other side tends to get dirty. This is particularly true with colors that have a small coverage. A box should be filled evenly across its entire length every time color is added.

Colors which have been scraped out of the boxes at the printing machine are obviously somewhat dirty. These colors are far too expensive to be thrown away, yet they cannot be used as they are. A "spot" or "patch" on each color should be on file in the color shop. Then as the colors are made up, possibly these dirty colors can be added to them in such small concentration as to have no effect. A great many of them can be used in experimental work.

Staple Cotton Fabrics

By JOHN HOYE
Fabric Technician with W. Harris Thurston, New York

This twenty-sixth instalment of Mr. Hoye's series of articles on staple cotton fabrics — which began in the January, 1936 issue — concerns Lappets and Shirting Madras.

LAPPETS

A LAPPET-WOVEN fabric is characterized by embroidery effects, produced during the weaving of the cloth by means of a special attachment to the lay of the loom. This attachment consists of a frame of needles spaced at regular intervals across the width of the lay, in front of the reed. Through each needle is threaded an extra warp yarn, with which the figure or design is produced. Yarn used for the figure (2-ply soft-twist) is usually heavier than that used for the ground cloth (usually a combed lawn) and stands out in a contrasting embroidery effect.

To form these embroidery effects, the needles controlling the embroidery or lappet warp yarn are first lowered to the bottom of the shed. The shuttle is then shot through the shed, guided by a row of pins so placed on the lay as to prevent the shuttle from striking the needles during passing of the shuttle through the shed. After the shuttle has passed through the shed, over all of the lappet ends, the needles are raised clear of the shed as the reed moves forward to beat up the filling in the usual way. At the same time, a lateral shift of the needle frame takes place; this carries the lappet ends above and across a predetermined number of ground ends, thus producing a float on the surface of the fabric.

The above four operations complete the cycle of motions necessary to produce, on the surface of the fabric the floating yarn which constitutes the embroidery effect. Each needle produces a separate figure, which may either be in a continuous zig-zag line, or in the form of a spot.

The advantage of this method of producing figures is that there is practically no waste of yarn between figures. Where a continuous design is not used, and the figure or spot is separate, the floating yarn between each repeat is afterwards clipped off. However, the amount of waste is much less than in the usual clipped spot or design cloths, where the extra filling yarn floats along the back of the cloth, between the repeats of the design, and is afterwards clipped off.

Lappet figures usually give an all-over effect, or they can be made in spaced stripe formations. They are usually the same color as the ground fabric and are piece dyed. Colored lappet effects on white grounds or varying colored lappet yarns across the width are also used.

Uses: Women's and children's summer dresses, etc. Leno and gauze fabrics are also used as base cloths for lappet-woven figures, and made into curtains, etc.

Yarns: Ground fabric: 50/1 combed cotton; lappet: 20/2 Soft-twist combed cotton (two lappet yarns spaced about ½ in. apart).

Finishes: Usually mercerized, crisp lawn.

Example: Lappet weave on combed lawn—36 in. 76x56 7.00 yd. (over-all).

SHIRTING MADRAS

SHIRTING MADRAS is one of the staple shirting fabrics. This type of cloth always has a woven design, usually on a plain ground. The design may consist of cords, stripes, plaids, checks, or small figured effects. The weave is usually a dobby, although it may be a jacquard. Madras shirtings are usually made with colored yarns, vat dyed. The woven design, however, may be self-color (same as the ground)—in which case the cloth is bleached or piece dyed. The yarns forming the design may be mercerized cotton, or they may be rayon or silk. Madras is made with carded or combed yarns, and the construction is square or thereabouts.

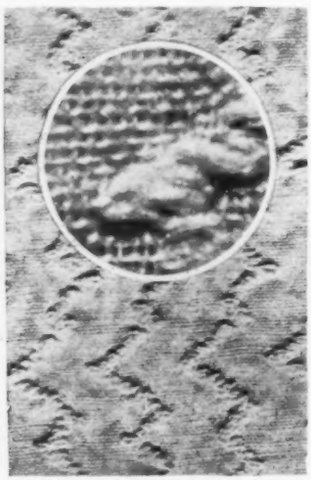
Uses in finished state: Shirts, shorts, pajamas, etc.

Yarns: 30s to 40s carded, 34s to 60s combed.

Finishes: Usually mercerized; cheaper qualities plain finished—often preshrunk.

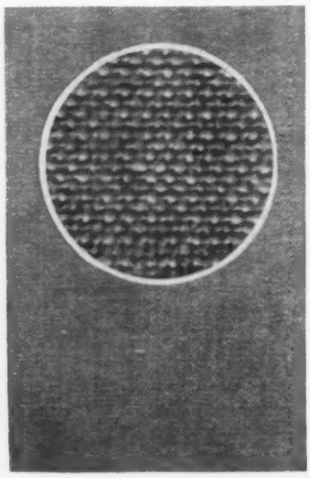
Examples of shirting madras:

38 in.	70x76	4.25 yd.—carded.
37½ in.	76x76	3.80 yd.—carded.
38 in.	76x76	4.75 yd.—combed.
38 in.	100x100	4.50 yd.—combed.
38 in.	92x88	4.50 yd.—combed.

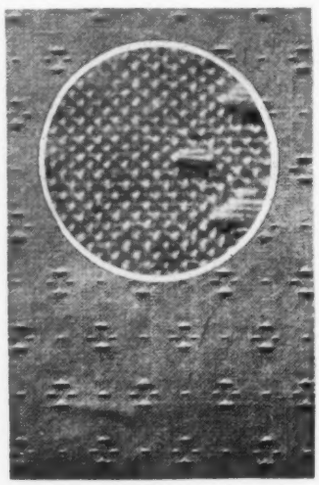


Lappet-woven design —36 in., 76x56, 7.00 yd.

Reeves Bros., Inc.



Fine-yarn dress or shirting chambray—38 in., 88x92, 5.70 yd., combed. Described last month.



Shirting Madras — 38 in., 100x108, 4.50 yd., combed

Lighting the Mill

What you should know about lamps to keep operating and replacement costs at a minimum

By ROY A. PALMER
Illuminating Engineer
Duke Power Co., Charlotte, N. C.

GOOD LIGHTING in the textile mill is such an important tool in production that the superintendent, maintenance engineer, and other executives of the mill should be well informed regarding various items making up the lighting system. Since lamp bulbs constitute the heart of the system, a few pointers may be helpful in securing greater economy and better results from them. Since tungsten-filament lamps are more commonly used at the present time, this article will be confined to a discussion of lamps of that type.

Replacement of lamp bulbs is an important part of the maintenance of the lighting system. Poor maintenance may be directly attributable to installation of improper lamps, because of wrong opinions of their characteristics and performance. Large amounts of time and money are spent each year by lamp manufacturers in developing and improving lamps, with the result that many changes have been brought about in the lamps used today. Opinions established a few years ago may be entirely wrong today.

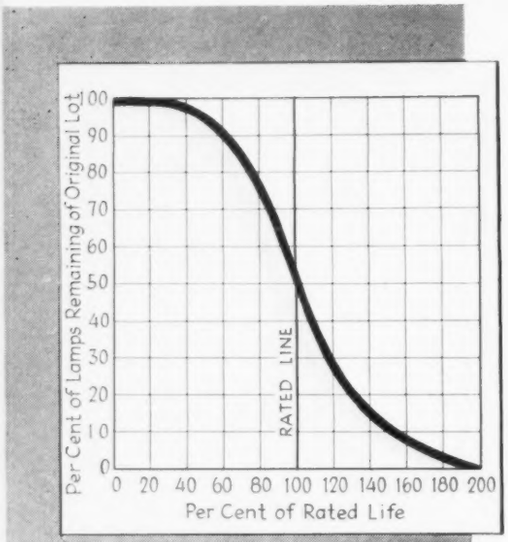
Incandescent lamps produce light by virtue of heat. Edison adopted the carbon filament because it has a high melting point. Tungsten has a lower melting point, but the tendency of its molecules to disperse and fly away from the filament is not so great as in the case of carbon. For that reason, tungsten can be operated at a higher temperature, which means more light per watt of electricity consumed.

Since a higher temperature will produce more light, it is naturally desirable to operate the filament at the highest temperature possible without causing too rapid a rate of evaporation and, consequently, short life. Even in a vacuum bulb, the tungsten filament disintegrates or evaporates when burned. Introduction of an inert gas into the bulb retards the rate of evaporation, thus permitting filament operation at increased temperature. Argon with a small percentage of nitrogen is used.

When these gases were first tried in lamps, it was found that the gas conducted the heat away from the filament, thus reducing the temperature. This disadvantage was overcome by coiling the filament. An additional increase in efficiency has recently been obtained by coiling the coiled filament. All tungsten lamps of 40 watts and above are gas filled. The filament of lower wattage lamps must necessarily be smaller, and, since there is relatively small filament surface, the heat is carried away so rapidly by conduction when gas is introduced into the bulb that no advantage is gained as in the case of larger lamps.

Since the gas causes the heat to rise to the top of the bulb, the fine particles of tungsten which are given off as the lamp is burned will rise to the top also. For this reason, it is

Fig. 1. Mortality curve of tungsten-filament lamps



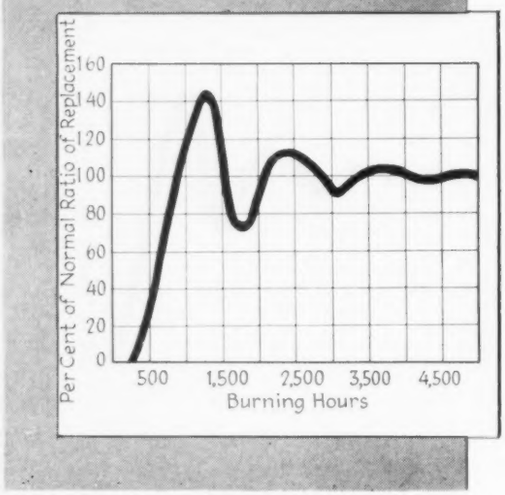


Fig. 2. Fluctuation in renewal rate of lamp bulbs

best to operate lamps in a base-up position. The deposit of tungsten particles will then occur at the neck of the lamp, where it is least effective in cutting down the light output.

So many things are purchased on the basis of length of life that is only natural that the quality of lamp bulbs is often measured on that basis alone. However, a long-life bulb may not be the most economical. Lamp manufacturers can make lamps which will last indefinitely. But such lamps will not give much light for the current they consume. Lamps are designed, therefore, to give the most light for the cost of the current and lamps. Accordingly, it is actually cheaper to burn out lamps, because the cost of light becomes lower.

Most lamps are designed for 1,000 hours average life, while some lamps (such as the 75- and 100-watt) are designed for 750 hours average life. It is impossible, however, to tell how long a single lamp will survive, but the average life of a group of lamps will be very close to the designed life. Of a group of lamps some may be burned out after 200 hours of operation; others may burn as long as 2,000 hours.

Early burn-outs may result from several causes. Excessive line voltage is perhaps the most common cause. Therefore, lighting circuits should have the advantage of stable voltage furnished by voltage regulators.

As a lamp is operated, the filament gradually evaporates and thereby becomes thinner. The rate of evaporation often will be greater in one spot than over the rest of the filament. At such spots the temperature will rise until the filament reaches the melting point and then burns out. It is fortunate that lamps fail after considerable evaporation of the filament has taken place. Otherwise the lamp might be kept in operation long after it had blackened so much that its candlepower would be reduced beyond economical operation.

Renewal Rate Fluctuation

Maintenance men in mills have noted that there are periods when lamp burn-outs seem to occur with greater frequency. While this may be due to excessive voltage or to short-life lamps, it most likely is due to fluctuations in the rate of burn-outs of original and renewed lamps. Lamps in a new installation will burn out according to the typical mortality curve of Fig. 1. As the lamps burn out, others are substituted, among which a long-life lamp probably replaces one whose life was short. This lamp may, therefore, last longer than lamps which are placed in operation at a later date.

In Fig. 2 it will be noted that the rate of renewals of the original installation is above normal after the rated life of the lamps is passed, but it falls again after the replacement lamps are in operation. As the rated life of the replacement lamps is approached, the rate of renewals is again increased; but this rise is not so great as with the original lamps because they were placed in operation at different intervals. As time goes on, this operation is repeated; but each rise and fall in the rate of renewals becomes smaller and smaller.

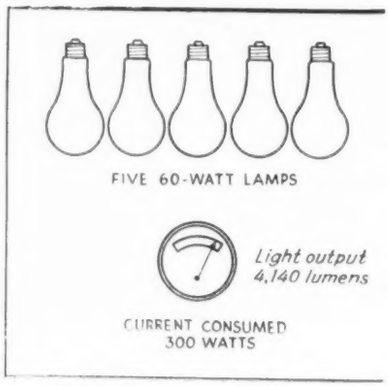
Lighting circuits should be separate from all power circuits. Lamps should have the same voltage rating as the voltage of the line. If the lamp has a higher voltage rating, its life will be prolonged, but the light output will be considerably reduced. More lamps will be necessary, therefore, to produce the same illumination level. The light output is reduced so greatly in proportion to the wattage consumed that the cost of light is raised unduly.

Wires that are too small for the load they are called upon to carry, or runs which extend too far from the panel board, cause a drop in voltage. Such line drop has often been brought about by the substitution of larger lamps for smaller ones as the demand for better light has grown. Another reason is the skimping of wiring specifications. All of these contribute to lamps operating under their voltage rating, with consequent dim burning and higher cost of light.

Perhaps the main reason for inadequate wiring is the use of the National Electrical Code as a wiring standard. The "Industry Handbook on Adequate Wiring," recently published, should be used as a guide, instead of the Electrical Code, to insure satisfactory and economical operation of lamps. No. 14 wire should be kept out of mill wiring. The curve in Fig. 3 illustrates how rapidly the cost of light rises when the line voltage drops. Note that the cost curve steps up with an increasingly steeper slope as the voltage drops.

Lamp Efficiency

The light output of lamps is rated in lumens. The efficiency of a lamp is, therefore, the lumens per watt of electricity consumed. Large-size lamps are more efficient than smaller lamps. Thus in an installation where numerous drop cords with small lamps are replaced by fewer large lamps in proper reflecting equipment, the light output of the lamps alone will be greater per watt of electricity consumed and the reflecting equipment will further improve the lighting result. For example, it would take seven 60-watt lamps consuming 420 watts to approach the light output of one 300-watt lamp. Many maintenance men object to the inside frosting of lamps, because they believe the frosting reduces light output. Actually, very little light is absorbed and the value of the frosting in softening or diffusing the light greatly overbalances the small amount of light absorbed. Many people judge volume of light



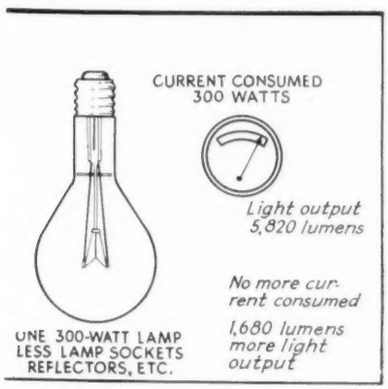
by brightness and, because inside frosting reduces brightness, the inference is that light output is reduced. The brightness of a 10-watt clear bulb may be several hundred times that of an inside-frosted 25-watt bulb, but the light output of the latter is considerably higher.

Considerable light is absorbed, however, when bulbs are frosted on the outside. The light from the filament passes through the glass to the frosting on the outside of the bulb, where some of the light is diffused through the frosting. The balance is reflected back through the thickness of the glass to the other side of the bulb, where the same action is repeated. Each time the light passes through the glass some is absorbed.

Inside-frosted lamps are now available in all standard sizes. They are particularly useful for indirect and semi-indirect systems, since the frosting minimizes the line of cut-off on the side walls and ceiling, eliminates shadows of supporting rods of the fixture, and prevents images of the lamp filament on the ceiling, which clear lamps often produce.

Effect of Heat from Lamps

The electric incandescent lamp is different from any other illuminant, but it still produces light by virtue of heat. Thus it introduces heat into a room. This must be considered when designing air conditioning systems. Also, some care is necessary where excessive dust collects or where explosive vapors are present. Danger from these conditions is rather remote, however, as the electric lamp has been proved through experience to be the safest illuminant yet devised. Certain dusts with the proper mixture of air may cause an explosion when the bulb is accidentally broken. For this reason, lamps on drop cords should be avoided in such places. There are few, if any places, where drop cords should be tolerated. General lighting systems with standard reflecting equipment protect the bulbs from breakage (and theft) and permit the use of vapor-proof inclosing globes where dangerous dusts and vapors prevail.



It is interesting to note that the performance of lamps will not be affected when they are inclosed in non-ventilated lighting units. Even if the temperature should be increased 100° or more it will have no effect on the filament, which operates in the neighborhood of 2,500° C. From the lighting standpoint, it is decidedly advantageous to have non-ventilated units, since they then become dust- and insect-proof and, in some instances, moisture-proof in damp locations.

Proper Lamp for the Job

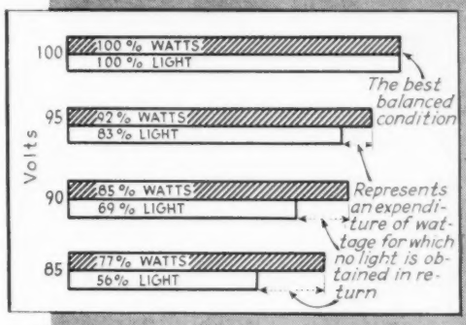
There are many types of lamps available, each of which has its specific applications. Therefore, it is necessary to select the proper lamp for the job if the most satisfactory and economical results are to be obtained. Perhaps the most flagrant misuse of lamps in textile plants is that of clear or inside-frosted lamps in RLM domes. Where these reflectors are mounted less than 20 ft. from the floor, inside-frosted lamps should not be used. The inside-white-bowl lamp should always be employed. The latter lamp was designed especially for the standard RLM dome reflector. The white bowl shields the bright lamp filament from view, and, when this lamp is viewed from below when burning, the brightness of the bowl is about the same as the brightness of the reflector surface. Results obtained from the white-bowl lamp with and without the reflector are shown in Fig. 4.

Daylight lamps should not be used for general illumination in textile plants. These lamps are intended to provide light of spectral color-quality approximating daylight. The blue glass bulb absorbs about one-third of the light. When the bulb is inclosed in an opal glass globe, the color quality is again brought back to about the same as that of a clear bulb. Since no color correction of value is obtained in this case, the loss of light by absorption by the bulb is not justified.

In many mills rough-service lamps and mill-type lamps are used indiscriminately. Rough-service lamps are designed to withstand bumps and rough handling, such as are experienced by a hand lamp. Mill-type lamps are intended for places where there is steady vibration of relatively high frequency. These lamps should not be expected to give satisfactory service when they are used for the wrong type of service. In both of these lamps extra supports are used to give rigidity to the filament and, since these supports conduct heat away from the filament, their light output is lower than that from standard lamps.

At the present time the silver-bowl lamp perhaps has a greater application in office fixtures than in the mill.

Fig. 3. The cost of light rises when line voltage drops



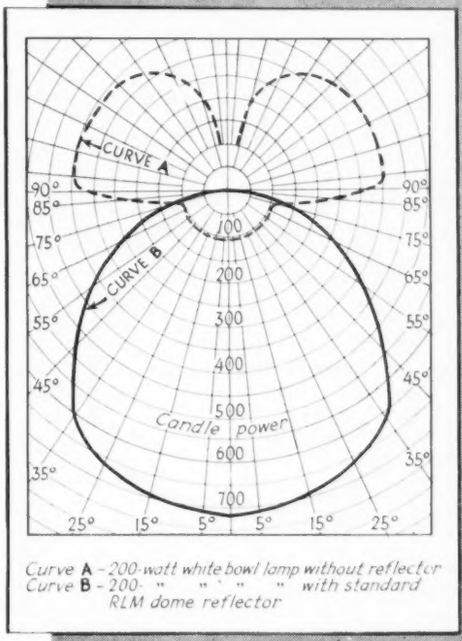


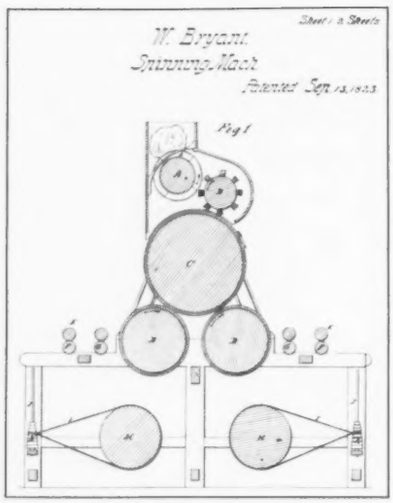
Fig. 4. Results obtained from white-bowl lamp with and without RLM dome reflector

However, reflector manufacturers are bringing out new equipment employing this lamp to advantage. While it may seem wasteful to throw away the reflector when the lamp burns out, the advantage of having a clean, efficient reflector throughout the life of the lamp is of considerable value. The oportunity for extensive use of this lamp in textile plants is interesting and we can expect many new applications in the near future.

Finally, it is interesting to note that the first 150-watt, tungsten-filament lamp in 1909 cost $2.65, and, except for a price increase when the gas-filled lamps were introduced and during the war, the cost has dropped constantly until today, this lamp costs only 25c. At the same time, constant improvements have brought a continual rise in the light output of lamps. More than twice as much light is received from today's lamp as was received from the lamp of 1909.

Columbian Spinster

Combined ginning, carding, and spinning before Civil War



Cross-section of the Bryant spinning machine patented in 1823, an improvement over the original McBride device. None of these machines is known to be in existence today.

IN 1927, Capt. George W. Swartz, of Avallon Place, near Huntsville, Ala., presented to the United States National Museum an old piece of plantation machinery which had been on his farm for more than 57 years. This machine combines the operations of ginning, carding, and spinning cotton, and is operated by turning a hand crank. A 91-year-old ex-slave had identified it as a "spinginny." It was used in the manufacture of "Negro cloth," a coarse fabric which was made into winter clothes for slaves and into bagging.

In 1805, an ingenious mechanic of Nashville, Tenn., J. McBride, was granted a United States patent for a machine to "gin, card, and spin cotton." The description of this machine and the model which the patent law required were burned up when the United States Patent Office was destroyed by fire in 1836.

A Tennessee subscriber to the *American Farmer*, published in Baltimore, wrote to the editor in 1827 describing a portable machine known as the "Spinster" which would spin daily enough cotton to make 7 to 10 yd. of cloth 1 yd. wide. The machine sold for $130.

Meanwhile, another Nashville mechanic, by the name of William Bryant, developed some improvements on McBride's combination machine and was granted a patent covering his improvements on Sept. 30, 1823. Bryant's application was also destroyed when the Patent Office burned, but a description of Bryant's patent is to be found in the new Patent Office, copied in longhand.

The drawing shows a double machine, with the gin and carding rolls in the center, and with two sets of drawing rolls and six spindles at each end. So far as is known, not one of these double machines survived the Civil War. The Bryant patent indicates that the earlier McBride machine of 1805 used the saw gin (as modified from the Whitney patent of 1794), ordinary leather card clothing on the carding cylinders, and the Arkwright drafting rolls, first used in America by Samuel Slater in 1790.

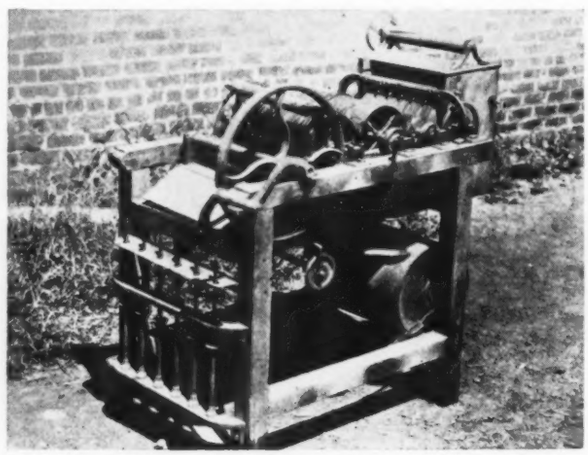
From Tennessee the "Spinsters" spread to Alabama, Lousiana and the Carolinas. The North Carolina State Museum at Raleigh has a fine example of this sturdy plantation machine, one of four made by John or George Lewis at Ossippee, Alamance County, N. C., about 1825. A correspondent in 1828 wrote the *American Farmer* from Greensboro, N. C., that a company of young mechanics was agent for or had purchased rights to the "Bryant" machine, and was manufacturing and selling it. The machine with only one attendant would "with great ease spin 20 to 30 cuts a day." Letters to the *Southern Cultivator* in 1864 tell of the use of these machines in South Carolina under the name "Spinning Jenny."

During the Southern Textile Exposition held at Gastonia, N. C., in 1926, one of these old machines was exhibited by W. R. Armstrong, a prominent textile executive of that city, who stated that he had purchased it from an old lady in Gaston County, N. C. This lady said it had been in her family for about three generations; her grandfather had paid about $100 for it new.

The machine presented to the National Museum by Captain Swartz was made by J. & T. Pearce, of Cincinnati. An account of the Pearce factory was published in an 1845 Cincinnati directory. Mechanical details of the machine are described, and it is mentioned that 2,500 of the machines had been sold in the South at $130 each.

The already twice-patented Columbian Spinster made a third trip to the Patent Office for improvement before the product turned out by this interesting machine was discarded in favor of factory-spun yarn. The final patent was granted to J. E. Burdge, of Cincinnati. He claimed as new only a small fluted roller placed in the breast of the gin above the saw cylinder.

Of the estimated 3,000 or more of these plantation spinning machines that were in use in the South before 1865, but a few seem to have survived the period of the Civil War. Seven have so far been located by the writer. The breaking up of the plantation system and the increase of cotton-spinning mills in the South combined to sound the death knell of the Columbian Spinster.



Columbian Spinster built about 1840 by J. & T. Pearce, Cincinnati, Ohio, and presented to the U. S. National Museum in 1927. There were 3,000 or more of these machines in use on southern plantations before the Civil War.

ADVERTISING PAGES REMOVED

THE EDITOR SAYS

Two "Musts"

THERE ARE just two things that business wants and should have out of the present session of Congress.

The first is revision of the undistributed profits tax, to permit retention of ample "cushion" for emergencies, and to exempt expenditures for plant expansion and modernization.

The other is radical revision of the National Labor Relations Act so that neither the act nor the board it created can continue as a one-sided medium for the airing of spite complaints and for the furtherance of the selfish aims of union officials. No past or present piece of legislation with which we are familiar has been so thoroughly unfair or so subversive of the very ideal it was originally supposed to serve: namely, improved labor relations.

If industry is wise, it will not scatter its shot. It will not fight every bill which is proposed. It will not ask for repeal of the two acts referred to above; that is utterly hopeless. It will not even push for any positive legislation because out of the political mess which Washington is right now there cannot possibly come any sound laws.

All industry should try to do is to get relief in the two directions proposed above, and then go home—in the fervent hope that Congress will do likewise.

Boycott Hysteria

THE LINE-UP on the question of an economic boycott against Japan is significant.

On the pro side are groups of college girls throwing their stockings and other "intimate apparel," as the papers enjoyed putting it, into a bonfire—and having a swell time doing it. Then there are some women shoppers out on an emotional joy ride. On the same side are Senators who like to talk in resounding terms about the "cruel, inhuman, merciless and indefensible attack upon a peaceful people."

On the anti-boycott side are the people who realize that one's personal feelings cannot be the basis for international relations—but that, on the contrary, the whole fabric of such relationships can be ruined by ill-advised actions. On this side are *both* camps of organized labor, united in this one instance because of the threat to employees. On this side—more noteworthy still—is a joint council representing *both* labor and industry in defense against this stupid mania.

We repeat what we said in a previous issue: One's opinion of the issues in the Japanese-Chinese war has—or should have—no bearing on one's attitude on the boycott. The latter would be not only ineffectual as a weapon against Japan, but actually loaded with possibilities of serious consequences both to ourselves as a nation and to many thousands of our fellow citizens who earn their living in American mills producing for American people.

Fortunately, indications are that the majority are too sane to yield to this hysteria—and that the attempted boycott will fail utterly.

Add Textile Menu

JACK CARD started something with his article on the "textile menu" in last month's issue. His mail—which he very kindly, in fact insistently, turns over to us—brings daily additions to his list of cheese and fish and gelatine.

There's the farmer down in Oklahoma who, by cross-breeding cotton and okra, claims a "super" cotton with stalks from four to seven feet tall and bearing from 150 to 250 blooms, resulting in a production of from five to 10 times as much cotton as common cotton.

Then there's the report from Japan of the production of a "silk wool" from soy beans.

Also, we learn that a way has been found to convert pineapple fibers into "silk." On this last rumor, the *Christian Science Monitor* comments: "Invention has become so ingenious converting plant life into serviceable cloth that it would occasion only mild surprise to learn that a good quality of sandpaper is being made from spinach."

All we can say to that is that we don't approve of jokes about a serious matter.

Readers Say:

HERE ARE THREE comments on our last month's editorial.

A New England wool manufacturer writes:

"I have read with a great deal of interest and satisfaction your editorial, entitled, 'A Simple Program for 1938' which is in the January issue just received. I am in hearty accord with your statement that industry needs promotion and statistics. Promotion is a thing hard to measure but I am satisfied that we should continue the promotional work that has been carried on for the last few years. I have been a good deal disturbed, however, by the lack of interest shown in this work by some of our largest manufacturers.

"I am also strongly in favor of the statistical work. There, again, I regret to say a good many people are pretty lukewarm, but I believe that ample and reliable statistics are essential in carrying on any business.

"I am glad you have brought these two subjects up and I believe your editorial will have great influence."

•

An executive of a Worth Street house writes:

"Keep it up—I'm glad to see that you are talking again about getting thorough information about the textile industry.

"This condition under which we now work, of having part information, is a dangerous one and in complete accord with the principle that a little knowledge is a dangerous thing. If we know what our production and stocks are, but don't know what the stocks in our customers' hands are, then perhaps we are in a weak position and don't know it. Probably I don't need to add any illustrations of this sort for you, but I am doing it in the hope that it will encourage you to keep the agitation going."

•

A southern rayon producer writes:

"I have just read your editorial in the January issue of 'TEXTILE WORLD.' I notice you admit we are in the midst of a depression. I have been admitting for some time that this depression is the worst that we have experienced since we have been down here.

"I am in sympathy with the points you make in your editorial, but it does seem to me that the industry is afflicted with too much gossiping and wild rumors. For example—if there had not been so much talking during the first six months last year about there being a shortage of rayon, and as you point out, if there had been some good statistical information, the yarn market perhaps would not have been oversold so badly.

"To 'boil' it down—what you are saying and what I am trying to say is—'why can't the textile business be run on a good business basis'? From my standpoint it is nothing but a 'pain in the neck.'"

NEWS OF THE MONTH

Workers, Employers Fight Japan Boycott

Plans to combat the anti-Japanese boycott of American-made silk products took concrete shape Jan. 25, with announcement that labor and textile industry leaders had united forces in a new organization to be known as the Silk Industry Joint Council. This body has established headquarters in Washington, D. C.; it is headed by Emil Rieve, president of the American Federation of Hosiery Workers, as council chairman. Serving with Mr. Rieve on the executive committee are Paolino Gerli, president of the International Silk Guild, William H. Gosch, president of the National Association of Hosiery Manufacturers, and Sal B. Hoffman, president of the Upholsterers International Union of America.

The new organization issued a statement denouncing the boycott as inimical to American workers and American industry. Formation of the Council, it was explained, meant that workers and employers have combined to "ask co-operation of the American public in protecting and preserving American jobs for American workers and the American silk industry for Americans." It was emphasized that, while $90,000,000 worth of raw silk was imported from Japan last year, American labor and service gave this a sales value of $580,000,000 and that the jobs of 250,000 Americans in American mills are menaced by the boycott.

The Durene Association has at no time supported the boycott on silk hosiery nor will it participate in the boycott in any manner in the future, states Dean Hill, president of that association. He went on to point out that the boycott was deplored by the members of the association. He stated that his group had started its styling of lisles in March 1937, long before Japan invaded China. He also emphasized that Durene had at no time promoted any other than the patterned or mesh type lisle.

Textile Wage Cuts Spread

At the end of the month textile wage cuts were becoming more common in New England, principally in fine cotton goods plants. These ranged around 12½% in general, following a cut of that amount in New Bedford, and in Fall River, Mass.

The action taken by the leaders of the New Bedford Council in accepting the wage cut proposed by the employers was criticized by the Textile Workers Organizing Committee on the basis that the matter was not submitted directly to the workers for consideration.

The Council, on the other hand, stated that wages were cut temporarily because the wage scale committee of the Council was unwilling to recommend a strike and to make "shock troops of New Bedford workers as in 1928." It was further claimed that, during the negotiations, orders for 18,000,000 yd. of fine textiles were placed and 98½% of the orders went to competitors out of New Bedford. "On this basis," states the Council to its members, "you do 98½% of the loafing, while workers elsewhere work 98½% and loaf 1½%."

It was learned from officials of the Southern Combed Yarn Spinners Association that no wage cut had been put into effect by any of the members of this association and that no wage cut was being contemplated. It was pointed out that the association did not formulate wage policies for its members but that members acted entirely voluntarily on such matters. However, association officials through close personal contact with its members could state that no individual mill in this group planned to cut wages at this time. The southern combed yarn mills have confined their production to delivery requirements for some time and with the increased shipping instructions received during the last month, operation time of the mills has picked up to some extent.

Wm. P. Jacobs, secretary of the Cotton Manufacturers Association of South Carolina, stated that a survey of the South showed the absence of wage cuts, and also strong resistance to the idea on the mills.

CAN THIS BE SO?

Southern textile manufacturers are still pinching themselves to find out whether they are awake. It just doesn't seem possible. An article appeared in the Saturday Evening Post by Dr. Stanley High under the title "A Kind Word for the South" which really did say a kind word and presented some facts about social conditions in southern mills which are well-known to the industry itself but which are usually presented in a completely distorted way in general media. Dr. High did not use rose-colored glasses but on the other hand he told the story as he saw it and the result was decidedly creditable to the industry.

The only fear is that the shock will be too much for southern mill men. They aren't used to it and it's a question whether they can take it.

Ellenbogen Bill Threatens Again

The House labor subcommittee that held hearings on the Ellenbogen Bill last year has moved to revive it. This action, according to Chairman Kent Keller, is the result of appeals from textile labor groups that an effort be made to stop the wage decline. Francis Gorman and other labor spokesmen, particularly from Paterson, have been in Washington. Uncertainty as to general wage-hour legislation helped to inspire the appeal. Mr. Keller still contends, as last year, that the textile, steel, automobile and coal industries should be brought under labor standards laws and that on the resulting experience a general law could be built. He sees no reason, however, and believes the President agrees, why both the Ellenbogen and Black-Connery Bills should not be passed. The Barden amendment proposed on the wage-hour bill providing gradual wage increases over a two or three year period will be tacked to the textile bill.

Strong Opposition to Wool Tariff Cut

Echoes of bygone Schedule K fights are reverberating before the Committee on Reciprocity Information in Washington. This committee is working on a reciprocal tariff agreement with the United Kingdom, and the wool schedule is being scrutinized.

The wool manufacturing industry, through its spokesman, Arthur Besse, president of the National Association of Wool Manufacturers, has submitted a brief opposing any reduction in present duties on wool products. Mr. Besse notes that the raw material duties are not slated for discussion at this time, but he adds that "it does not seem possible intelligently to consider any revisions in the wool tariff without starting with the duty on raw wool upon which the entire wool schedule is based."

A movement to form a united front against the proposed agreement was started at Lawrence, Mass., last month

when 50 industrial and business leaders met at the instigation of Mayor Walter A. Griffin, to plan the campaign which is to be carried out through the press and radio.

Speaking at the tenth annual dinner of the Botany Foremen's Association, Col. Charles F. H. Johnson, president of Botany Worsted Mills, stated that the proposed agreement would do serious harm to the wool textile business in this country.

Wholesale, Retail Groups Convene

Trade relations between textile manufacturers and their distributors were analyzed last month at the conventions of the Wholesale Dry Goods Institute and the National Retail Dry Goods Association which were held in New York, Jan. 20 to 21 and Jan. 31 to Feb. 4, respectively. Among the spokesmen for the textile industry at the wholesalers' meeting were: Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, who stressed the need for a central textile data agency, Sherman P. Haight, president, A. S. Haight & Co., underwear manufacturers, who emphasized the value of service in wholesaling, and Roy A. Cheney, managing director of the Underwear Institute, who spoke on "Truth in Fabric Legislation."

Labor, consumer, and vendor relations was the three-ply keynote of the retailers' meeting. Speakers on textile topics included Dr. Robert E. Rose, director of the technical laboratory, E. I. du Pont de Nemours & Co., Wilmington, Del., John C. Turrell, of the Sanforizing Division of Cluett, Peabody & Co., and Alexis Sommaripa, Rayon Division, E. I. du Pont de Nemours & Co.

Sloan Asks End Of "Name Calling"

Deploring the "flaunting of accusations and the calling of names" in connection with the current business recession, George A. Sloan, former president of the Cotton-Textile Institute, in a recent radio broadcast urged the counsel of wisdom and moderation. He said that Government and business can best serve by exchanging information and by working together at every point to turn this recession. "If they do," he said, "we may leave all the rest to some debating or historical society." As a member of the Business Advisory Council, Mr. Sloan was a guest speaker in one of a series of broadcasts sponsored by the U. S. Department of Commerce.

New office building recently completed by Burlington Mills, Greensboro, N. C. It is modern in design, completely air-conditioned, and equipped with the latest-type lighting devices. The building consists almost entirely of private offices which are occupied by Burlington executives who coordinate operation of the group of mills from here.

Compiles Facts About S.C. Cotton Mills

The Cotton Manufacturers Association of South Carolina has distributed to several hundred prominent citizens of that State a comprehensive study entitled "Facts and Figures About the Cotton Mills of South Carolina." The material is in loose-leaf form and supplementary pages will be mailed from time to time. The purpose is to get across to the public the correct facts about this industry. As the accompanying letter states: "If the facts are known, there will be no misunderstanding."

Long-Fiber Spinning on Cotton System

A new method for spinning worsted or rayon staple fibers, of four in. or more in length, on standard cotton spinning machinery, is being introduced to this country by Jan Weinberger, Czechoslovakian consulting textile engineer. According to Felix Pfeffer of St. George Textile Corp., 1071 Sixth Ave., New York, N. Y., American agents for the equipment, yarns of equal quality to those spun on standard worsted equipment, together with worsted-type spun rayon yarns and many carpet yarns can, with the Weinberger attachments, be spun on the cotton system, with labor savings of as much as 60%. It is stated this equipment is already in use in three European textile mills and that negotiations are under way with several United States mills.

Confer on Cotton-Shrinkage Rules

Proposed trade practice rules covering the shrinkage properties of cotton piece goods were considered at a conference held Jan. 27, in Washington, D. C., under the auspices of the Federal Trade Commission. Speaking in favor of the standards, Dr. M. Leo Gitelson stated that the hearing represented the culmination of five years' activity toward bringing order into the shrinkage situation. Through the initiative of the Textile Shrinkage Conference of the New York Board of Trade, efforts have been made to obtain the thoughts of every group interested in the shrinkage problem. The proposed rules, in his opinion, offered the best solution that has been suggested thus far.

Job finishers offered considerable opposition to the standards proposed, on the grounds that they were not practical; and the National Association of Finishers of Textile Fabrics offered a substitute set of rules for consideration. Speaking for that association, Frank A. Lester asserted that the finishers are sympathetic with the idea of creating shrinkage specifications that will be practical. Henry Miller, Assistant Director of Trade Practices, presided over the conference.

This and That

◆ The 18th International Cotton Congress was opened in Cairo, Egypt, by King Farouk on Jan. 26.

◆ A bill to suspend the so-called six o'clock law for women employees in Massachusetts textile mills has been filed with the legislature of that State by request of Rudolph C. Dick, manager of the Naumkeag Mills, Salem.

◆ The Swiss Industries Fair for 1938 will be held at Basle, Switzerland, from March 26 to April 5. Among the industries which have a particular interest in this is the textile industry for which there is a special Fashion Saloon.

◆ Fred E. Beal, labor organizer, was arrested at Lawrence, Mass., on Jan. 19 as a fugitive from justice in North Carolina. He was sentenced in 1929

Silk-and-Bemberg satin, comprising about equal quantities of the two fibers, is in active call this winter for quality woven underwear. Above pantie and bandeau were styled by Bregstein-Richman from fabric by Excello Fabrics, Inc.

to 16 to 20 years for conspiracy in the murder of police chief O. F. Aderholt, in Gastonia, N. C. He was missing when an appeal was denied and has spent part of the intervening years in Russia. He recently wrote a book on his Soviet experience, which was reviewed in these columns.

◆ Sales psychology, knowledge of fabrics and suitability of different textiles to specific consumer needs, are among the points stresed in a sales training manual for retail stores, prepared by Louisville (Ky.) Textiles, Inc., in collaboration with *Good Housekeeping Magazine.*

◆ Scheuer & Co., textile brokers, New York, are distributing the 1937 edition of their Comparative Textile Chart.

Rayon Crepe Research

Proof that it is possible to produce rayon crepe dress fabrics free from objectionable variations in pebble using regular deliveries of rayon yarn is afforded in a report issued recently by the Rayon Crepe Research Committee. According to the report, the investigation included the making of 500 yd. of fabric. Examination of the finished pieces showed that the fabric could be considered commercially perfect from the standpoint of pebble uniformity. The investigation was conducted jointly by the Throwsters Research Institute, Inc., and the A.A.T.C.C., under the supervision of W. F. Macia, the Research Fellow.

Japanese Revise Raw-Silk Classification

The Japanese Government has announced the revision of the methods of testing and classification of raw silk. The new method is to be effective on and after July 1, 1938. The revisions are as follows: (1) Discontinuation of the degrading of a lot by findings of numerous super major defects in skein inspect. (2) Change of minimum allowances for each grade of the composite percentage, neatness, and cleanness percentage in the classification table as shown below:

		Sp. AAA	AAA	AA	A	B
Composite (%)	17 den. & below	90	88	86	84	82
Percentage	18 den. & above	90	88	85	83	81
Neatness (%)	16 den. & below	92	90	88	87	85
	17 den. & above	..	..	..	..	..
Cleanness (%)	17 den. & below	93	91	90	88	86
	18 den. & above	91	89	87	85	83

		C	D	E	F	G
Composite (%)	17 den. & below	80	77	73	68	Below 68
Percentage	18 den. & above	79	76	72	67	Below 67
Neatness (%)	16 den. & below	83	81	77	73	Below 73
	17 den. & above	..	..	..	..	..
Cleanness (%)	17 den. & below	84	82	78	74	Below 74
	18 den. & above	81	78	74	70	Below 70

Rayon Producers Cut 150 d. to 54c

As the outcome of a spirited week of competitive price-cutting in viscose process yarns, the American Viscose Corp. on Jan. 20 announced a five cent price cut, which plus a four cent reduction some days previous brought the industry's best-selling number, 150 den. 24–40 fil., down to 54c. per lb as against 63c. which had prevailed through most of 1937. The new reduction was accepted as setting market levels for the industry and proportionate revisions by other producers were regarded as a matter of course. The same company cut acetate process yarns, putting its 150 denier and coarser twist numbers at 59c against the old price of 63c. The viscose company also withdrew guarantees, which step other firms duplicated.

Wool Goods Background Improved

Although unfilled orders for wool goods are low compared with a year ago, stocks among buyers are believed to be low thus necessitating constant replacement through small orders, if not soon developing a broader buying movement. Unfilled orders for men's wear are estimated at 15,000,000 linear yards against 39,000,000 a year ago; women's wear, 7,000,000 yd. against 15,000,000. Since mill production rates are about half what they were a year ago, the figures are by no means bearish.

In men's wear herringbones, chalk stripes and cheviots are the leading sellers. Mackinaws have been sampled for next season, but mills are loath to name prices. Women's wear fabrics have been moving fairly well with sales estimated at 1,000,000 yds weekly. Fleeces, tweeds and shetlands are in good demand.

Cottons Somewhat Steadier

Spot buying dominated in cotton goods through January and early February, with market tone slightly improved. Prices of 38½ in. 64x60, 5.35 yd., print cloth varied from 4⅝ to 4¾c, compared with the 1937 high of 7⅞c last April. Continued curtailment made for a rather hopeful attitude as to the prospects of improved buying, possibly at the start of the second quarter. Yarns were firmer as users covered a little further ahead.

Raw Silk Prices Hold Steady

Surprisingly enough with all the talk of anti-Japanese boycott, raw silk prices firmed and held steady in the first few weeks of the year. Crack double extra 13–15 white 78%, which closed at $1.51 to $1.52½ on Dec. 24, closed at $1.51 to $1.51½ on Jan. 24. This was the first four week period in some months which did not show a drop. Importers attributed the steadiness to the fact that hosiery mills were operating more hand-to-mouth and had increased their spot buying.

May Peg Wool Price

National Wool Growers Association has asked the Reconstruction Finance Corp. to make a $15,000,000 stabilization loan to fix the price of scoured wool at about 81c per lb. Representative Cummings of Colorado points out that mills will benefit by more accurate anticipation of future costs.

Sanforizing Gains

Yardage of goods Sanforized increased from 358,000,000 in 1936 to 450,000,000 in 1937, according to an announcement made recently by Cluett, Peabody & Co., that the licenses have been granted to 89 companies in 10 countries. In the United States 63 mills are using the Sanforizing process and 123 machines have been installed.

American's Recent Loss Wipes Earlier Profit

American Woolen Co. reports net loss of $1,854,901 for 1937, compared with profit of $1,929,983 for 1936. The loss came entirely in the last six months, wiping out a profit of $3,393,-552 for first six months. The adverse position was largely from inventory loss of $4,022,989.

On June 30 inventory totaled $35,-000,000, and on July 23 bank loans, $18,500,000. By Dec. 31 inventories had been cut to $22,066,510 and bank loans had been paid off. Unfilled orders on hand Dec. 31 were about half those of 12 months previous.

Outerwear Convention, Banquet March 22 in N.Y.

The Anglo-American tariff issue and the proposed Federal Trade Practice rules for outerwear will be chief topics at the annual convention of the National Knitted Outerwear Association, to be held March 22 at the Astor Hotel, New York City.

Tops Fairly Stable

Wool top prices were relatively stable during January on the New York Exchange. Price on Dec. 31 was 87¢ for spots, on Jan. 14, it receded to 86¢ and recovered to 87¢ on Jan. 21.

Apparel Wool Stocks Decline in 1937

Apparel wool stocks in the U. S. on Dec. 31, 1937 (117,849,000 lb.) were 10% less than such stocks one year previous. Carpet wool stocks (44,482,000 lb.) were 17½% more. Of the apparel wool, dealers were holding about ⅝ths of the supply and manufacturers the balance; a year ago the manufacturers were holding 3/5ths and dealers the smaller amount.

TEXTILE WORLD is a consolidation of *Textile World Record* and *Textile Manufacturers Journal*, effected in 1915.

Textile World Record was the paper resulting from the merger, in 1903, of *Textile World* and *Textile Record*. The former was founded in 1888 by Walter B. Guild and Henry G. Lord. In 1895 it absorbed *Industrial Record*, formerly *Manufacturers Review and Industrial Record*, which was started in Boston in 1868. *Textile Record* was founded in 1880 in Philadelphia by Charles Heber Clark and Frank L. Nagle.

Textile Manufacturers Journal was founded in New York in 1894 by Joseph H. Bragdon. The merger of *Textile World Record* and *Textile Manufacturers Journal* in 1915 resulted in the formation of Bragdon, Lord & Nagle Co., Inc., and publication of *Textile World Journal*, later shortened to TEXTILE WORLD.

In 1923 *Posselt's Textile Journal* was absorbed by TEXTILE WORLD; and in 1924 *Textiles* was also absorbed; in 1931 *Textile Adance News* was absorbed.

In 1928, TEXTILE WORLD became affiliated with McGraw-Hill Publishing Co.

The editorial staff of TEXTILE WORLD consists of: Douglas G. Woolf, editor; William B. Dall, managing editor; Winn W. Chase, associate editor; John Black and Howard P. Galloway, assistant editors; William G. Ashmore and Earle Mauldin, southern editors; H. S. Knowlton, New England editor; Paul Wooton, Washington correspondent. [NOTE: Published annually for purposes of record]

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Japan Stabilizes Silk Prices

It was announced in Tokio, Jan. 20, that the Raw Silk Price Stabilization Committee had set 950 yen as standard selling price and 520 yen as standard purchasing price of raw silk.

Organize to Improve Hosiery Merchandising

Improvement in hosiery merchandising is the aim of a new merchandising division of the National Association of Hosiery Manufacturers, which was organized Jan. 25, at the Waldorf-Astoria Hotel, New York. E. S. Jamison, of James Jamison & Co., New York, was elected chairman of a steering committee.

A.A.T.C.C. Notes

Allen Jones, superintendent Muscogee Mfg. Co., was the principal speaker at a meeting of the Southeastern Section, A.A.T.C.C., held Jan. 27, in Columbus, Ga.

Speakers at the January meeting of the New York Section, held in Rochelle Park, N. J., Jan. 28, were George Lane, of Van Vlaanderen Machine Co., and C. J. Huber, of U. S. Testing Co.

Viscose Corp. Holds Merchandising Forum

Problems which confront the retailer and the consumer in selling and using rayon merchandise, were subjected to clinical analysis at a three-day forum held by the American Viscose Corp. at the Waldorf-Astoria Hotel, Jan. 28, 29 and 31. Speakers included Stanley B. Hunt, of the Textile Economics Bureau and Dale Carnegie, author and lecturer.

TEXTILE WORLD ANALYST

TEXTILE WORLD'S index of textile mill activity for December showed a continuation of the radical drop which characterized the last part of the year. The rate for that month was 38% below December 1936, and 13% below a "normal" December (1924-31 average). However, thanks to remarkable activity in the first half of the year the total rate for 1937 was approximately the same as 1936 and consequently nearly 25% above a "normal" year.

TEXTILE WORLD'S carded cotton fabric margin increased slightly during January, while the carded yarn margin, after a long decline, also turned upward. (Tables I and II.)

TEXTILE WORLD'S price index numbers showed a mixed trend last month, but declines were in the majority. Raw cotton advanced; yarns and gray goods were stationary, while colored goods increased slightly. The entire wool series was down, with exception of cloth, which was unchanged. Raw silk index was stationary, while the rayon yarn index changed for the first time in nine months, reflecting the cut in the price of 150 denier made in January.

Textile World's Price Index Numbers

STARTING with January, 1936, TEXTILE WORLD has revised its price index numbers to a 1923-25 base, to correspond with current statistical practices. Figures on cotton manufactures, Aug. 1, 1933 to Jan. 6, 1936 include processing tax.

Date	Cotton Index Numbers: Cotton	Yarns	Gray	Colored	Wool Index Numbers: Wool	Tops	Yarns	Cloth	Silk Index Raw-Silk	Rayon Index
1923-25	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
1930 ave.	50	61	61	72	58	61	72	90	109	46
1931 ave.	32	68	46	59	46	49	59	71	32	32
1932 ave.	24	37	37	60	36	40	52	57	21	28
1933 ave.	39	56	55	50	53	59	62	80	21	26
1934 ave.	61	67	70	62	63	70	75	91	17	25
1935 ave.	60	68	67	69	56	58	70	88	22	24
1936 ave.	**45**	**63**	**63**	**68**	**72**	**78**	**76**	**93**	**23**	**25**
Jan. 1936	48	67	63	68	67	73	75	93	26	24
Feb. 1936	42	62	58	67	72	81	77	93	24	24
Mar. 1936	42	61	57	66	73	81	77	93	23	24
Apr. 1936	43	60	55	64	68	75	76	90	22	24
May 1936	43	57	54	64	67	75	76	90	21	24
June 1936	44	58	57	65	67	75	76	90	20	25
July 1936	48	61	61	70	69	75	75	90	22	26
Aug. 1936	45	62	63	70	70	75	74	90	23	26
Sept. 1936	45	62	63	70	70	75	74	90	22	26
Oct. 1936	45	64	67	71	71	75	74	92	23	26
Nov. 1936	45	65	74	72	78	82	76	100	26	26
Dec. 1936	48	72	80	74	87	90	84	105	26	26
Jan. 1937	48	73	81	76	90	93	88	108	27	26
Feb. 1937	48	74	78	78	90	92	90	108	27	26
Mar. 1937	53	78	80	78	87	88	90	112	27	26
Apr. 1937	53	80	82	80	84	86	90	112	27	27
May 1937	49	75	76	78	82	84	89	112	24	27
June 1937	47	70	71	78	78	82	88	112	25	27
July 1937	45	65	67	78	78	82	88	112	26	27
Aug. 1937	37	59	62	78	80	82	88	112	25	27
Sept. 1937	33	54	56	73	78	81	87	107	25	27
Oct. 1937	31	51	53	67	73	76	82	100	23	27
Nov. 1937	29	48	50	61	66	68	74	97	22	27
Dec. 1937	30	47	49	60	60	64	70	97	21	27
Jan. 1938	32	47	49	62	57	63	68	97	21	26

Key wool prices with usual comparisons follow:

	Feb. 1, 1938	Jan. 3, 1938	Feb. 1, 1937	Jan. 25, 1936
Fine and fine med. territory	$0.68	$0.70	$1.08	$0.82
Ohio ⅜s	.31	.32	.54	.41½
Tops fine 64-66s	.93	.96	1.38	1.12½
Average ⅜s	.76	.78	1.17	99
High ⅜	.71	.73	1.10	.91
Noils, fine	.58	.60	.85	.70
⅜	.45	.48	.66	.54
2-40s 60s wstd yarn	1.42	1.45	1.90	1.50
2-32s 56s wstd yarn	1.20	1.22½	*	*
8020 serge	2.00	2.00	2.20	1.95

Current statistics on wool consumption and mill activity:

Wool consumed, clean equiv.	December (4 weeks)	November (4 weeks)
Apparel wool, lb	10,420,000	10,604,000
Carpet wool, lb	2,856,000	2,728,000
Machinery activity (40-hr. shift)		
Looms (50-in. and wider)	64.7%	56.1%
Carpet looms	38.1%	35.7%
Combs	64.6%	62.0%
Worsted spindles	54.2%	47.6%
Woolen spindles	60.2%	55.3%

Key rayon prices and statistics follow:

Prices	Feb. 1, 1938	Jan. 3, 1938	Feb. 1, 1937	Jan. 25, 1936
Viscose process				
75 denier (18-30 fils.)	$0.77	$0.83	$0.90	$0.90
100 denier (40 fils.)	.71	.76	.79	.79
150 denier (40 fils.)	.54	.63	.60	.57
Acetate process				
150 denier	.54	.63	.60	.60
Cupra. process				
150 denier (112 fils.)	.54	.63	.65	.65
Rayon staple, 1½, 3, and 5½ denier viscose	.25	.25	.28	.34

Indices of Deliveries*	Jan.	Dec.	Nov.
In years 1937-8	374	242	252
In years 1936-7	539	562	508

* Rayon Organon. Covers 100% data for all processes 1923 to date. Note that acetate is now included. Shipments index for all rayon 1923-25 = 100.

Key silk prices and statistics follow:

Prices	Feb. 1, 1938	Jan. 3, 1938	Feb. 1, 1937	Jan. 25, 1936
Crack XX 13/15 wh. 78%	$1.49½	$1.55	$1.98	$1.90
Tram, 5thd Japan 85%	2.29	2.29	2.88	2.62
Tram Crack XX 78%	2.16	2.17	2.62	2.49
60s-2, spun silk	3.15	3.15	3.05	2.97½

Statistics	Imports	Approximate Deliveries	Stocks at Warehouses
January, 1938	29,858	30,715	48,678
December, 1937	26,093	21,982	49,535
November, 1937	36,339	31,749	45,424

Fabric and yarn manufacturing margins follow:

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933	21.4	April, 1936	14.3
October, 1933	19.1	May, 1936	14.3
January, 1934	18.4	June, 1936	15.3
April, 1934	17.6	July, 1936	16.9
July, 1934	15.3	August, 1936	18.9
August, 1934	16.6	September, 1936	18.4
September, 1934	18.6	October, 1936	21.2
October, 1934	17.4	November, 1936	25.4
November, 1934	15.8	December, 1936	28.1
December, 1934	16.2	January, 1937	28.6
January, 1935	16.2	February, 1937	26.2
February, 1935	16.0	March, 1937	25.6
March, 1935	15.9	May, 1937	23.1
April, 1935	16.1	June, 1937	21.2
May, 1935	16.0	July, 1937	20.1
June, 1935	16.5	August, 1937	19.4
July, 1935	15.2	September, 1937	18.1
August, 1935	17.1	October, 1937	17.3
September, 1935	17.9	November, 1937	16.9
October, 1935	17.7	December, 1937	15.7
November, 1935	16.4	January, 1938	16.2
December, 1935	16.2	Jan. 5	15.7
January, 1936	17.2	Jan. 12	15.9
February, 1936	16.3	Jan. 19	16.4
March, 1936	15.5	Jan. 26	16.6

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933	23.5	May, 1936	14.8
October, 1933	20.0	June, 1936	14.6
January, 1934	18.3	July, 1936	15.0
April, 1934	15.9	August, 1936	16.5
July, 1934	14.6	September, 1936	16.3
August, 1934	15.3	October, 1936	17.2
September, 1934	15.6	November, 1936	18.0
October, 1934	14.6	December, 1936	20.6
November, 1934	13.3	January, 1937	20.8
December, 1934	13.5	February, 1937	21.2
January, 1935	13.5	March, 1937	21.3
February, 1935	13.9	April, 1937	22.6
March, 1935	14.4	May, 1937	21.2
April, 1935	14.1	June, 1937	19.3
May, 1935	13.8	July, 1937	17.8
June, 1935	14.5	August, 1937	17.2
July, 1935	14.3	September, 1937	16.1
August, 1935	15.3	October, 1937	15.3
September, 1935	15.4	November, 1937	14.7
October, 1935	15.8	December, 1937	13.7
November, 1935	16.3	January, 1938	13.5
December, 1935	16.3	Jan. 5	13.2
January, 1936	18.4	Jan. 12	13.5
February, 1936	17.5	Jan. 19	13.6
March, 1936	16.3	Jan. 26	13.8
April, 1936	15.6		

Key cotton prices with usual comparisons follow:

	Feb. 1, 1938	Jan. 3, 1938	Feb. 1, 1937	Jan. 25, 1936
Spot Cotton, N. Y.	8.51	8.38	13.29	11.95
High previous month	8.72	8.51	18.33	12.90
Low previous month	8.38	7.97	12.91	12.55
10s hosiery cones	19½	18	29	26
10s/2 carded skeins	18½	18	29½	25½
20s/2 carded peeler warps	22½	21½	34½	28½
60s/2 combed peeler warps	50	48	64	55
60s/2 mercerised cones	63	63	77½	68
37 in., 3-yd. drill	6½	6½	10½	8½
38½-in. 64x60s	4½	4½	8½	5 9/16
36-in. 4-yd. 56x60s	5½	5½	8½	7½
Denim, 2.20s	11	11½	15½	14

Statistics of particular interest to cotton manufacturers showing December operation and the raw material situation:

	Nov.	Dec.
Spindle activity (% capacity)	105.2	92.0
Spindle activity (millions of hours)	6,482	5,726
Cotton consumed (bales)	484,819	433,058
Cotton exported (bales)	796,985	751,001
Cotton imported (bales)	9,115	8,638

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Labor Unions Not Preferred

worker would rather work and eat than strike and starve

By EARL FARMER

(Editor's Note: The following article is a voluntary contribution from a former overseer of spinning in a southern mill.)

IT IS a well known fact that the South is said to be a place of cheap labor; a section having a very low living standard. In other words, it is claimed that southern textile, as well as certain other southern industrial workers, are underpaid, half-starved, ill-clothed, and ignorant in the extreme. It has been and still is claimed that these wage-earners are discontented, diseased from lack of proper nourishment, etc., and that they are now turning to labor unions for relief. They are said to be organizing with the hope of forcing their employers to pay higher wages, grant shorter working hours, do away with company stores, and provide better and cheaper housing facilities. Nothing could be further from the truth!

Southern textile workers have just as high a living standard as workers in other industries calling for equal skill. This means that they are just as well-fed, just as well-clothed, just as well-housed, and that they enjoy just as many luxuries as do, for instance, their New England brothers—in spite of anything you may have heard to the contrary! True enough, southern workers handle a little less money than do some workers in certain other sections of the country. But consider the difference which exists in living expenses. A New England worker pays 10% more for food, 25% more for clothing, and 50% more for housing than does a southern worker. This can easily be verified by a comparison of southern market prices with those in the North.

The South's mild climate gives southern workers a decided advantage over workers living in northern sections, since it holds fuel bills to a low figure. Other advantages are company-supplied housing of high quality, cheaper food prices, and steadier employment. Thus it can readily be seen that the workers have no cause to strike, nor have they a desire to do so.

These factors tend to explain why, after more than 15 years of strenuous effort to organize the South, the would-be organizers have hardly reached first base. It's admitted that they have made some headway—but a very little—in certain widely separated spots. But, taken as a whole, southern textile mills still are 98% open shop. Experiences with union organizers have, for the most part, proved disastrous to southern mill employees. In the great majority of cases where the union gained a foothold, organized the workers, and called strikes, the organizers skipped out with the money workers paid into the treasury, which was to have been used to purchase food while on strike. The strikers and their families were left to starve while holding the bag.

Today, southern textile workers, realizing it is a case of work and eat or strike and starve, choose the former. Labor unions, with their confidence men and gyp artists, are not preferred!

Rolling Cafeteria Creates Good Will

By BERNARD HELLER

ONE of the best methods of promoting good will among personnel, to the writer's mind, is use of the "rolling cafeteria" which some of the largest manufacturing organizations in the country have recently established. This is particularly adaptable where continuous production on automatic machines is required.

Rolling cafeterias are wagons or pushcarts which are propelled about the mill two or three times on each 8-hr. shift. The wagons are loaded with candies, gum, smokes, cakes, soft drinks, milk, ice cream, sandwiches, etc. Either money or coupon books are used in purchasing. Coupon books usually contain 20 tickets valued at 5c. each. Ordinarily, one man tends the wagon but, where shifts are unusually busy, two men may take care of sales. Selling prices are based on competitive prices of local merchants.

Where the number of employees is large, purchases of goods from wholesalers and manufacturers should be made on a large scale to insure low cost, and this combined with low operating cost should result in fair profits. A small locked room in a corner of the factory is all that is necessary for storage purposes. This is usually available at no rental charge.

Net profits are held in trust in a local bank under the supervision of regular office manager or supervisor. These funds may be used for a variety of employee requirements, such as outfitting a ball team, financing picnics or Christmas parties, paying an outright bonus at end of year, etc.

The service provides employees with food guaranteed clean and fresh at no extra cost, and turns the profits back to them in the most useful manner. This latter is particularly important, since otherwise the profits on their outside purchases would be entirely wasted.

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Bill and Pete Missed!

Editor, Overseers' Corner:

I believe this is the first time I have had occasion to make a protest, but I am afraid you are holding out on us. We were told several

CONTRIBUTIONS ***to "The Overseers' Corner" are paid for without regard to length. We will use letters discussing the narrative on this page or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks or practical helps will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York, N. Y.***

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months ago that Bill and Pete were on vacation, but we know that they are not being paid for loafing all this time—and it is not likely that they would lose so much time at their own expense. I believe they are on a sit down strike. If so, throw the guys out on their noses, and if they acknowledge the error of their ways and promise to be good, restore them to their rightful place. If not, replace them with Happy Hooligan or some other noted character.

R. W. C.
West Virginia

(Editor's Note—Bill and Pete are spending the winter in Florida. They say, "Why run a mill when you can't sell goods at a profit? It's cheaper to go fishing." Anyone else miss the boys?)

Recognizing Service

Editor, Overseers' Corner:

It has been customary with many firms to make some recognition of long and faithful service of individual employees, but some organizations have never seemed to see the value of so doing. There can hardly be any doubt that an employee is pleased to know that his good record has been noted, and giving it some recognition is certain to result in mutual good will between employer and employee.

There are many different ways in which recognition may be made. One of these is a cash award, but it is doubtful if this as as effective and as acceptable to the average employee as is something having more expression of thought and feeling. The cash award is appreciated at the time it is given, but something less transitory is far more fitting.

Study will reveal various things that can be done, that will have an enduring and a progressive action in the building of mutual good will. Possibly one of the most valuable is the award of a small, unobtrusive button that can be worn by the employee to denote his years of service. Such buttons should be of high quality, such as any worker will not feel backward about wearing, and unobtrusive enough so that they will not appear flashy. Different buttons to denote different lengths of service terms, the buttons graduating upward in value as the service terms grow longer, are best. When worn, they tend to keep both employee and employer conscious of long and faithful service both rendered and appreciated. In many cases they can be distinctively made to have some reference to the line of products manufactured. In other cases, of course, this is not feasible, but even then they may be distinctively made.

J. E. H.
Illinois

Overseer's Practical Helps

Soap-Thickened Oil in Cups of the Wick Type

Sometimes on a loom will be found oil cups which contain a woolen-felt wick, as shown in Fig. 1. The purpose of this wick is to supply the bearing with a steady, metered amount of oil. In a certain mill it was noticed that oil in the cup was becoming very thick and grease-like in appearance. In fact, the oiling crew was closely questioned to find out if the members had been putting in grease instead of oil. They had not, it was learned, and the problem then came to the attention of the chemical laboratory.

Investigation showed that the oil used in the cups was of the soap-thickened or non-flowing type. Further, it was a mineral oil containing about 1% calcium soap in suspension, making the oil appear cloudy or opaque.

In an effort to determine what caused oil to thicken, a small porcelain cup (A), Fig. 2, was nearly filled with the oil, in which was immersed a woolen-felt wick (C) hanging down into a similar cup (B), empty and located at a lower level. The whole arrangement was covered with a large glass beaker to exclude dust, and left standing for several weeks. Result was a clear oil in cup B and a much thicker grease-like oil in cup A.

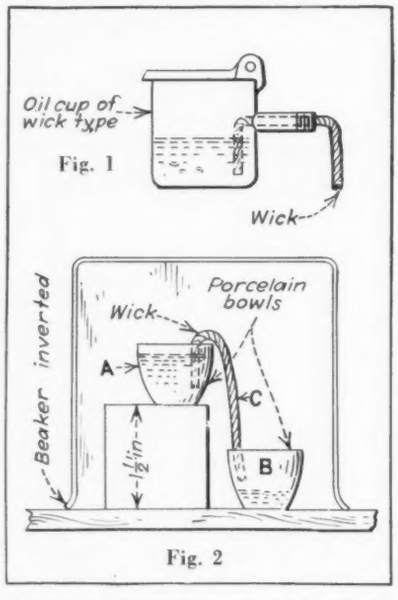

Fig. 1—Cross-section of wick-type oil cup. Fig. 2—Diagram of laboratory experiment

The moral is that oil alone travels through the wick to the bearing, leaving the soap behind. Lubricant in the well gradually becomes thicker due to accumulating soap, which gradually lowers the effective capacity of the oil well. The remedy is to use a straight mineral oil or compounded oil which does not contain soap.

W. S. B.
Massachusetts

Humidity in Throwing Affects Acetate Crepe Luster

One of the important factors conducive to uniformity in acetate crepes is controlled humidity during the spinning process, particularly while spinning crepe filling yarn. From the standpoint of production, this is essential in any rayon throwing, but the vagaries of uncontrolled humidity show up to a greater extent in acetate crepes than in crepes of other types because the soft warp yarn lends itself more readily to the characteristics of the filling yarn.

In one mill without controlled humidity a sling psychrometer test showed 39% mean relative humidity. At the time, 150-denier rayon dry elongation was 10%. This same rayon under conditions of 65% relative humidity has a dry elongation of 18%. The advantage of operating under conditions where elongation is so much higher is shown by a difference in spinning production of more than 10%. Furthermore, twist is smoothly formed in contrast to the tendency to corkscrew under dry conditions.

It has been found that humidity variation during spinning produces a variation in smoothness of the twist in the crepe thread. This affects

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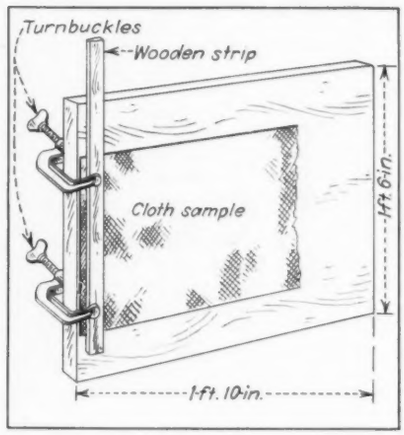
luster of acetate cloth. These variations of luster in the cloth sometimes run a cop length, more or less. They have no regularity of appearance and have been attributed to many things, especially uneven twist and let-off bars. Twist variation would more often than not run in cop lengths. Let-off bars, of course, have some regularity and are seldom over 2 in. Copping tensions on rayon crepe yarn are not so susceptible to producing variations as is generally supposed because after the twist is set the crepe yarn can stand quite some tension without showing any ill effects.

The variation of luster in acetate cloth caused by humidity conditions in throwing is purely in the physical arrangement of twist. Twist applies itself differently, depending upon the moisture content of the yarn at the time of spinning. If the yarn contains the required amount of moisture, twist will apply itself smoothly. If the yarn is dry, it will tend to make a rough twist. This, then, becomes permanent in the yarn after steaming, and further variations of humidity do not change its character.

C. S. M.
Massachusetts

Miniature Inspection Board

A small inspection board made from a piece of 1 ft. 6 in. x 1 ft. 10 in. five-ply wood (costing about 25c.) will come in handily for numerous odd jobs about the office or inspection department. It presents an excellent aid to dissecting and analyzing samples without employing cumbersome devices. The board utilizes a thin strip of wood or metal to hold one side of the cloth. If the strip is of wood, small brads are driven through it so that only short, sharp ends stick out from the side, to be used for holding the sample. In making use of a metal strip, several holes can be drilled from end to end and thumb tacks used for tacking. A strip the height of the board, as shown in the sketch, can also be used, with two half turnbuckles for tightening. The board is especially useful in the case if weaves calling for cross dye or opposite twist warpwise.



Sample can be quickly attached to board for analysis

H. E. W.
Pennsylvania

Questions and Answers

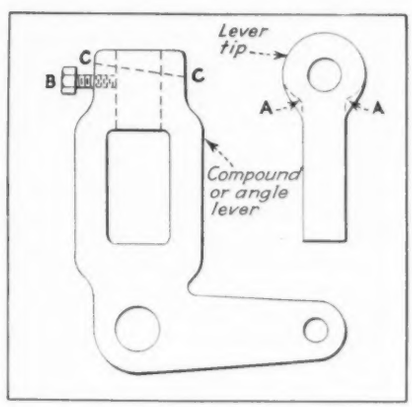
Changing to Flat Quills

Technical Editor:

In the article "Changing to Flat Quills," which appeared in the December, 1937, issue of TEXTILE WORLD, *it is stated: "Cut the top off the compound lever . . . This will permit easier adjustment when leveling the shuttle box." I am not just clear as to where this cut is to be made. Will you please explain? (8511)*

In preparing the compound or angle lever, and the lever tip, for use with the large shuttles required by flat quills, cuts should be made along the dotted line marked *A*, on the lever tip, and *C*, on the compound lever, as shown in the accompanying diagram.

The grinding at *A* should be done carefully and accurately, as the lever must not fall deep into the angle-lever slot in case the setscrew becomes loose. The cut at *C* should cross the top of the angle lever on a slight angle, sloping down from a point slightly above the setscrew *B*.



Seconds in Pile Fabrics

Technical Editor:

Are there any statistics, on velvets and plushes, indicating how much is lost in second-grade pieces because of ends out? (8497)

The standard of quality for grading cuts depends on the policy adopted by a mill and the requirements of buyers. Therefore, it is difficult to give any hard-and-fast rule regarding the permissible percentage of seconds. In general, it may be stated that, where requirements are fairly stringent and where cuts containing any serious imperfections or an excessive number of minor imperfections are not classed as first quality, the number of seconds should not exceed 2%. The percentage should be less than this for ordinary, plain goods; and not greatly in excess for fancy or colored fabrics. Some mills, making both plain and fancy goods, keep their seconds at less than 1½% the year round.

Broken Hosiery Seams

Technical Editor:

We are inclosing herewith four stockings. You will note the seams are all broken at nearly the same place in the leg; this happens between the time the hosiery leaves the examining room and is received in the boarding room.

Our dyer advises us that, since all of this hosiery is dyed in rotary machines, he cannot account for the possibility of any extra tension being placed on the various stockings.

Have you ever had a similar problem or can you throw light on the cause? (8489)

The meager information supplied as to the method of handling the hosiery while in the process of dyeing makes it difficult to give any worthwhile opinion as to cause of the trouble.

We would most naturally think that you are netting your goods in small lots for the dyeing operation, but the exhibit of damaged stockings points strongly toward a process of throwing the goods in the dyeing machine in bulk, with over-loaded pockets, and the breaks developing from goods being tangled in the process of degumming and dyeing. We have also seen the same damage develop in the hydro-extractor, when goods were carelessly loaded in the basket and not suffi-

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ciently untangled, permitting the centrifugal force of the load after the extractor gets at full speed to place undue stress on a few pairs of stockings. These few pairs may be tangled between two larger quantities, which try to split apart under the force, and break and tear one or two stockings that are holding them together. The same condition can happen to lesser degree with improperly loaded dye nets and over-loaded machines, whether in the dyeing machine or extractor.

This problem is undoubtedly a dyehouse problem, and we believe that careful check-up will isolate it in either the dyeing machine or the hydro-extractor.

Holes in Hosiery

Technical Editor:

Kindly examine the inclosed hosiery and give us your opinion of the cause of the small hole marked. This line is knitted on full-head 45-gage machines from 3-thread, 20-turn silk. (8499)

It is our judgment that the holes in the sample submitted were caused by the slipping of throwster's knots. On examining this damage with magnifying glass, and lifting the ends of the broken thread into complete visibility, we could easily see the definite kink or loop of the knot in one end of the separated thread.

This opinion is based on the exhibit of the single hole in one stocking. It is possible similar damage is caused by contact with some metal object, such as rings or scissors, while the hosiery is being inspected or boarded; but more probably it would be caused by rough sinkers or dividers, which may become serrated by a broken needle or any one of a number of other causes known to the skilled fixer on full-fashioned machines. A careful examination of a number of such holes should give a more definite lead toward fixing responsibility for the major cause for the trouble.

Cotton Carding and Spinning Problems

Technical Editor:

We are running a cotton of 15/16-in. to 1-in. staple, strict low middling or less, making yarns from 7s to 45½s. Below are several questions we would appreciate your co-operation in answering.

1. How often should finisher drawing-sliver be weighed?

2. What is the individual allowable percentage variation from delivery to delivery?

3. We have a standard yarn folding board on which we place 1 yd. of sliver from each delivery on a frame and weigh the four ends of sliver. This average is used as the sliver weight. Is this procedure correct, or should we weigh each end individually and use these values?

4. What is the best way to obtain most even results from breaker and finisher drawings? We creel three cans per delivery at a time, in order to compensate for variations which might arise if a certain group of cans should come from cards which have recently been stripped. Is there any better way of creeling breaker drawing than this? With regard to the finisher drawing, is it better to creel the six cans from the same delivery of breaker drawing or is it better to mix these? (8522)

1. Finisher drawing-sliver should be weighed at least once every shift.

2. With equipment in good condition and laps properly made, there should be no variation from delivery to delivery.

3. Each end should be weighed individually. There should be at least two consecutive yards weighed out of each can. These individual weights not only show the actual weight in grains, but also show how the work is running and reveal the state of the laps, how the cards are running, and many other interesting facts. A record of the yard weights from year to year is interesting and valuable.

4. Creeling of the cans in sets of three is a good idea. At the finisher, we feel that better results will be obtained by a thorough intermingling of all the deliveries. In this way a better average will be obtained and the roving will be better from the additional blending received.

Producing Good Laps

Depends on close attention to all details

By J. T. KERSEY

THERE ARE five major causes of failure to produce good picker laps: (1) abnormal or subnormal moisture content in part or all of a mixing; (2) too much variation in fiber length—any variation affects the evenness, since rolls have to be set or spaced apart to suit the longest fibers and this makes the setting too great for the shorter fibers; (3) poor cleaning, due to not keeping the machines in good running condition, properly lubricated, and clean internally, especially screens and air passages; (4) improper mixing and blending of stock, due mostly to not putting cotton from at least ten bales on the feeding apron of each bale breaker systematically; (5) not putting the same amount of reworked waste in each lap. The following suggestions will help to overcome these causes of poor laps.

Moisture Content

If there is too much variation in weights and numbers, due to variable moisture content in laps, the evenness can be improved by keeping the temperature and relative humidity as nearly constant as possible and by making moisture corrections on laps during production. To do this it is necessary to change the weight on the scales every hour, or whenever the relative humidity changes. [According to E. H. Helliwell (see "Off-Weight Drawings," TEXTILE WORLD, Jan., 1938, page 54) corrected weight at indicated regain may be calculated as follows: Standard weight × (100 + % indicated regain) ÷ 100 + 7% standard regain. It is also possible, in a manner similar to that indicated by Mr. Helliwell in his article, to prepare charts showing net weight of laps, weight of rod, weight to be added on the scale-beam, and corrected weight of laps. —*Editor.*]

Fiber Length

For best results, use only one grade of cotton and make certain it does not vary more than 1/32 in. in fiber length. If more than one grade is put in a mixing, use a separate bale breaker for each grade and be sure the same amount of each grade is maintained in all mixes from day to day. This will keep the average color and strength the same in all roving and yarn. Be sure the grade and length of staple suit the quality and fineness of counts being spun, so that extra twist, with its corresponding loss of production and extra cost per pound, will not be required to give the yarn needed strength.

If compressed or high-density cot-

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ton is used in whole or part, take the pressure off the fibers at least twelve hours before using the stock. Loosening or removing ties will give the cotton a chance to expand to its normal condition.

Maximum Cleaning

Do not put any bales in the opening room until all dirt, leaf, sticks, grit, nails, and other foreign matter have been cleaned off exposed parts of bales. Such material, if left on, may cause fire at the picker beaters, damage to card lickerins and clothing, and will lower the quality of roving and yarn produced.

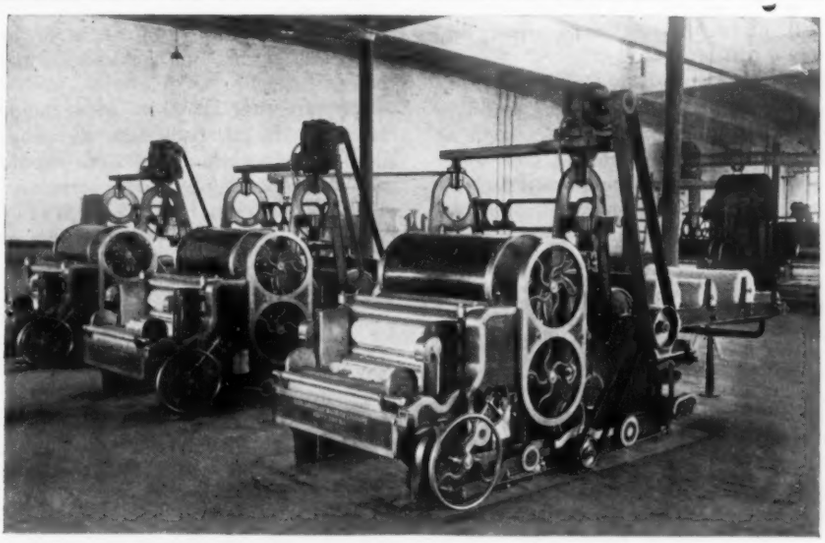
If it is desired to knock out more dirt, leaf, and motes at the vertical openers, speed up the beater, lower the beater, or close the grids partially. At the horizontal cleaners, speed up the beater, use a more open screen, or open the grids, as the case may be. If they can be adjusted, set them closer to the beater.

Beaters of breaker, intermediate, and finisher pickers must be kept sharp, properly balanced and set as close as possible to the feed rolls. Grids should be set the correct distance from the path of the beater. These settings vary with the length of the staple used, shorter staple permitting closer setting. Before attempting to set beaters be sure there is no wobble in the feed rolls, due to bent or worn necks, or worn or loose bearings. Beaters must run perfectly true and fit their bearings, and bearings must be kept accurately aligned.

Sharp beaters, if set too close for the length of the cotton, will damage or weaken the fibers. Dull or round-edge beaters will not clean leaf off the fiber; if very dull, they tend to produce curls and neps. Beaters set too far from feed rolls allow stock to enter the beater radius in bunches; this causes lumpy laps.

For cotton 1 to 1-1/16 in. in length the following settings will give good results: Buckley cylinder, ¼ in. to ½ in.; grids, 2/3 in. at top and 1 in. at bottom. Breaker blade beater, ¼ in. to ⅜ in.; grids, ½ in. at top and ¾ in. at bottom. Finisher blade beater, ¼ in. to ⅜ in.; grids, 5/16 in. at top and 9/16 in. at bottom. Carding blade beater, 3/16 in. to ¼ in.; grids, ¼ in. at top and 9/16 in. at bottom.

Have all dirt and lint cleaned out of and from around ends of cages at least twice daily; oftener if necessary. Dirt anywhere in the air passage affects the quality of work by causing thick and thin sections, ragged selvages, and holes throughout the entire length of laps. It also allows a great deal of dust and dirt to remain in the cotton.



Production of clean, smooth, even roving and yarn depends on close attention to picking and other preliminary processes.

Blades, shafts, and bearings of fans must be kept balanced and in good running condition. Fans should not run any faster than necessary to distribute the cotton evenly across the cages. Back drafts from dust rooms can be avoided by allowing plenty of space for the fans to discharge into. A common rule is to have a dust room with an area equal to that of all the machines blowing into it and a depth of at least 5 ft. The chimney and opening to chimney should each have an area of 5 sq.ft. for each machine discharging into the dust room.

Eveners

To obtain maximum evenness from eveners there must not be any dwell or lost motion at the apron, evener roll, feed rolls, evener bars, or any other mechanism connected with the evener. Such lost motion may be caused by aprons slipping, broken gears, gears loose on their shafts, worn feed-roll and evener-roll necks and bearings. All parts must be kept in first-class operating condition to obtain good laps.

The eveners on each machine should be taken apart, cleaned, and put in perfect operating condition every three months. It may be found that some of the bars are stuck or obstructed by chokes, or some of the parts are worn. This naturally affects the action. A very tight cone belt will also give trouble. These belts should be endless, and kept clean and free of soap and sticky compounds, or they will act too slowly when the evener sends them to a new position on the cones.

The proper way to find out if eveners are making laps not up to requirements is to test all of them often. This requires very little time. All that is needed to make an accurate test is five breaker laps of standard weight. First, make a finisher lap with four of these laps on the apron. Second, put all five laps on the apron and make a finisher lap, without making any adjustment on any part of the evener. Third, take two laps off the apron and make a finisher lap with three breaker laps. If all three of the test laps made are the same weight, or if the laps made with three and five breaker laps are within ½ lb. of the other lap, the evener is in good working order, and little can be done to improve it. If the variation is too great, the trouble should be corrected.

Check often the weight per yard from both breakers and finishers. If breaker laps vary much more than 5% and finisher laps more than 3%, the cause should be found and corrected. Commonly, faulty air distribution or evener trouble is at the bottom of such inaccuracies.

Unroll a lap from each machine, occasionally, in front of a window or large electric light. Look carefully for defects, such as insufficient cleaning, thick and thin sections, lumps, holes, and ragged selvages. If any of the machines make this kind of laps, they should be stopped, and the faults corrected without delay, especially in the case of finishers, which

THE OVERSEERS' CORNER

will make inferior card sliver and weak roving and yarns.

Waste

Have all reworked waste, such as finisher drawing, slubbing, and other roving waste made in the card room, run through the roving-waste machine. Roving and scavenger waste made in the spinning room should be run through the thread extractor before putting it into the regular mixing of waste and raw stock.

Use an automatic feeder to distribute reworked waste thoroughly and evenly. Do not trust to the human element. If any extra-dirty or damaged cotton is to be used, give it a good cleaning through a mote machine or willow, and feed it into the mix through the waste feeder. Also, if any cotton that contains more than 9% moisture content is to be processed, bring it back to normal before using.

Be sure that all white waste made in a day is put back into the work the following day. Waste should not exceed 6% for coarse yarns and 4% for fine yarns.

Do not put a day's production of waste in some one part of a day's production of laps. Set waste feeders so that, to use up a day's production of waste, they require the same amount of time that bale breakers run.

Better average results will be obtained if waste from the thread extractor and from the roving waste machine are fed to the waste feeder together. Do not run them into the waste feeder separately or without any system.

Finishing Silk Hosiery

Present-day methods add to appearance and serviceability

By J. R. McATEER

JUST a few years ago the finish of silk hosiery was obtained solely by regulating the degumming process to give a certain feel or hand. Thus, a full, scoop hand was obtained by removing all of the gum and thoroughly cleaning the hose; a soft hand was secured by leaving a portion of gum in the hose; and a crisp, wiry hand was procured by leaving a substantial amount of the gum on the hose—this being difficult to control, as one lot was likely to be degummed more or less completely than the preceding or the following one. In recent years finishing compounds have been developed which permit dyers to produce almost any finish that may be desired. Certain of these compounds not only improve the feel and appearance of the hosiery, but also add greatly to its wearing quality. In fact, even the very sheer 2- and 3-thread numbers can be worn with the assurance of the heavier numbers of just a few years ago.

Spot-proof or water-repellent finishes are comparatively new. Actual wearing tests have proved that hosiery treated with certain of these finishes are far superior to stockings which have not been so treated. Water-repellent finishes bind the loose filaments to one another, forming one solid thread, and thereby rendering the hose more resistant to runs caused by ordinary snags or friction. Again, the threads are not so likely to cut through one another when the stockings are being worn. The hosiery resists spotting and sheds water to a greater or lesser degree, depending upon the amount of water repellent applied. With the better compounds, the dull appearance, body, and other characteristics imparted are retained indefinitely if the stockings are washed properly.

Many Chemicals Needed

Many chemicals are needed to obtain the finishes now required on silk hosiery. Frequently even the dyer does not realize the number of chemicals that are employed. Sometimes there are as many as fifteen to twenty chemicals used. These fifteen to twenty chemicals are combined into four or five compounds by the chemical manufacturers, and these compounds, in turn, are used by the dyers in varying proportions on different styles of hosiery.

The dull appearance demanded today is obtained by forming an insoluble white precipitate on the hose. When the delustrant is properly applied, the precipitate adheres evenly to every part of the stocking. A typical delustering process which was used formerly consisted of treating the fabric first with barium chloride and then with sodium sulphate to form an insoluble precipitate of barium sulphate. More recently there have been developed a number of compounds which produce the delustering effect in one operation.

Some of the water repellents are complicated compounds, which not only do what their name applies, but also render the hosiery more resistant to mussing in the boxes and snagging during wear, add body, and impart a pleasant, cool feel. Again, they assist greatly in remedying the uneven stitches which are almost always present before finishing; that is, when the hosiery is stretched during boarding, the uneven stitches are pulled out, and the presence of the water repellent keeps the stitches from again becoming uneven when the hosiery is dried. A typical water-repellent consists of a combination of waxes, gelatines or starches, and an acid salt or salts. The latter may be acetates, formates, or sulphates of aluminum, zinc, or lead.

There are now in common use various finishing oils which cause the hosiery to slip on and off the drying forms more easily, impart a desirable soft feel to the fabric, and prevent cracking of the finish. Among the wide variety of finishing oils available are included sulphonated and stabilized olive, castor, and red oils, and combinations of these and other compounds with mineral oils.

Method of Application

Ordinarily the finishing materials are applied by the one-bath method. After the goods have been dyed, they should be rinsed thoroughly to remove all the loose dye. This will make shade matching less difficult for the dyer, as it will help to overcome the tendency of the dyes to go on the silk in the acid finishing bath, which causes the silk portion of the hosiery to become fuller and the cotton portion lighter. The finishing bath is brought to a temperature of about 120° F., the water-repellent added, and the goods are allowed to run for about 5 min. at that temperature. As mentioned previously, the amount of water repellent and other compounds used depends on the style of hosiery and the particular finish desired. Next the duller is added and the goods are run for another 15 min. Finally the oil is added, the goods are run for 5 to 10 min., and the bath is dropped. This completes the finishing process, and the hosiery is now ready to be removed from the machine for extracting and drying.

FREE FOR THE ASKING

READERS interested in literature reviewed on this page may secure copies by writing to TEXTILE WORLD, 330 West 42d St., New York, giving their company connection.

Lubrication. Texas Co. December issue of *Lubrication* discusses lubrication in the rug and carpet industry; pictures various machines used, and describes types of rugs produced.

Drying. Andrews & Goodrich, Inc. Discusses company's vapor dryer, its method of operation, advantages, sizes, etc.; includes diagrams and photographs showing applications in drying cotton and rayon fabrics.

Ventilation. Swartwout Co. Bulletin No. 205 discusses firm's line of rotary ball-bearing ventilators; includes several photographs of typical industrial installations.

Recording Instruments. Bristol Co. Bulletin No. 496 describes recorders for electrical unit measurements; gives information concerning their operating characteristics, and various applications.

Tanks. R. D. Cole Mfg. Co. New edition of *Tank Talks* describes pictorially, with only brief explanatory captions, numerous tanks built by the company.

Roller Chain. Diamond Chain & Mfg. Co. Roller chains for motor drives, machinery, and conveyor applications are described in the 96-page catalog 617. Catalog includes tables, formulas, selection and installation information, dimension and capacity data, etc.

Cylindrical Tanks. Haveg Corp. New bulletin, No. B-1, describes cylindrical tanks, covers, and outlets; gives complete technical data on standardized cylindrical tanks made of Haveg, a corrosion-resisting material.

Steel. Joseph T. Ryerson & Sons, Inc. Illustrated large-size 28-page book discusses Ryerson's certified steels; includes specifications, suggestions to heat treaters, etc.

Hose. Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc. Four-page illustrated folder shows numerous installations of Manhattan and Condor Hose; also contains detailed descriptions of types of hose available.

V-Belt Drive. Rockwood Manufacturing Co. Data book No. 794 describes company's line of V-belts, single-groove steel and cast-iron sheaves, and variable-pitch sheaves. Contains technical data on speed ratios, stock bores, pitch diameters, etc.

Reconditioning Service. Thomas & Skinner Steel Products Co. Illustrated folder describes company's reconditioning service for worn knitting and other textile machine parts, and products manufactured for textile mills.

Boiler - Regulation System. Brown Instrument Co. Catalog No. 5001 describes Brown automatic boiler-regulation systems, designed for boilers under 1,000 hp. operating at pressures up to 300 lb.

Cleaning. Breuer Electric Mfg. Co. Two pamphlets describe company's cleaning products—portable blowers and vacuum cleaners; list prominent users in many industrial fields; illustrate textile and other applications.

V-Belt Drives. Gates Rubber Co. January, 1938, edition of *Industrial News* describes application of Gates V-belts to spinning frames at Cliffside Mills; tells how application eliminated numerous difficulties attendant to changing over lineshaft-driven spinning frames to individual drive.

Blow-off Valves. Hancock Valve Division of Manning, Maxwell & Moore, Inc. 4-page bulletin No. 8500, describes new Hancock blow-off valves and illustrates construction and design features.

Roller Bearings. Shafer Bearing Corp. Catalog No. 14, 74 pages, describes Shafer line of bearings, flanged units, pillow blocks, etc. Catalog has sections devoted to design, engineering data, examples of application, formulas, load ratings, and other useful information.

Insulating Material. Celotex Corp. 4-page folder describes Celotex roof insulation for commercial and industrial buildings, both new and existing; lists advantages of insulated roofs; and contains technical data on savings obtainable with insulated roofs.

Fencing. The Stewart Iron Works Co., Inc. 44-page catalog, No, 79, describes Stewart chain-link wire fence and gates; contains numerous installation photographs, and a large section on specifications, construction details, etc.

Wooden Tanks. Hauser-Stander Tank Co. Wooden tanks for every purpose are described in catalog 33; contains photographs, construction data, and technical discussion of the action of various chemicals on different woods used in tank manufacture.

Dyes. Ciba Co., Inc. December, 1937, issue of *Ciba Review* discusses development of use of purple dyes from antiquity to the present time, and has a section devoted to technical and scientific notes and one on practical hints for dyers.

Compressors and Pumps. Ingersoll-Rand Co. Bulletin 2118 gives complete rating tables of 50 models of company's Type 30 industrial compressors and vacuum pumps, ranging in size from ¼ to 15 hp.

Power Generation. Troy Engine & Machine Co. Bulletin 101 describes how 43 concerns and institutions, including two textile firms, in 29 different industries cut power costs for driving 19 different types of auxiliaries to an average of ½ c. per kw.-hr.

Bearings. New Departure Division, General Motors Corp. Booklet presents numerically-arranged lists of competitive ball bearings, together with the corresponding numbers of interchangeable New Departure bearings; also includes definitions of letters and letter combinations used by various manufacturers to identify bearing characteristics.

Pipes. Republic Steel Corp. 66-page volume presents facts and general data on Toncan copper-molybdenum-iron pipe, including its characteristics, advantages, and applications.

Switches. General Electric Co. Bulletin 1565B gives switch ratings, dimensions, applications and advantages of A-C magnetic reversing switches CR 7009.

NEW MACHINERY AND PROCESSES

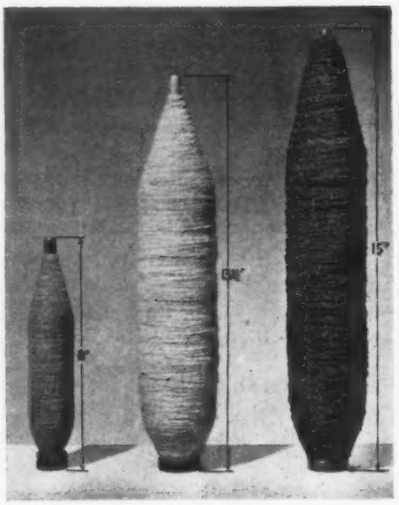
Mammoth-Package Mule

Johnson & Bassett, Worcester, Mass., are offering an improved wool spinning mule carrying a so-called Mammoth package measuring 15 in. in length and holding up to 7¼ times as much yarn as the ordinary small, general-purpose mule package. This new mule is a further development of the well-known Giant-package mule which carries a bobbin 13½ in. long, and will hold up to 6½ times as much yarn as the ordinary small package.

Since the Mammoth-package mule is brand new, detailed data on savings it will make possible are not yet available. However, in cases where it is adaptable to the production program, the manufacturers state there is no question that it will surpass the savings made by the Giant-package mule. Savings with the Giant-package type mule have proved to be as follows: 33 to 69% increase in spinning production, due to less doffs with maintained or increased spindle speeds; up to 15% reduction in carding costs, as compared with other spinning methods, due to the fact that the mule can handle a coarser roving; about 33-1/3% saving in floor space, because less spindles are required for a given production; as much as 54.5% reduction in spooling time, because the Giant-package supply decreases doffing; and a lower burling cost, due to less knots (these may be decreased as much as 60%).

The design features which are said to have contributed largely to the success of the Giant-package mule and which are also part of the Mammoth-package mule include the following: Attention has been paid to the convenience of operators, and the height of the spindles and roller beam has been kept at a comfortably low level.

Each mule is individually driven by a ball-bearing type motor, through a multiple Texrope drive, to a ball-bearing countershaft, a 3-in. double belt completing the drive to the mule head. Individual drive, of course, allows each machine to be shut down when required without affecting other machines; start and stop button is conveniently located within reach of the mule operator at the quadrant stand. Anti-friction bearings are used at all important points, for the double purpose of high operating efficiency and freedom from too frequent lubrication—some of the bearings require lubrication only once in twelve months



Mule Packages (Johnson & Bassett)

and others once in twenty-four months. When it is taken into consideration that most of these bearings replace other types which formerly required daily (or oftener) attention, a considerable saving in lubrication cost is apparent. Especially is this true where it is necessary to lubricate the motor and countershaft bearings frequently, requiring two mules to be shut down while this is being done.

Spindles are of new design, using a ball bearing at the foot and an oilless-type sleeve bearing at the shoulder. Each spindle is individually mounted in a heavy spindle bolster, which is fastened securely to a metal collar board. The step rail is eliminated, thus permanently eliminating trouble with sticking spindles and realigning of collar boards and step rails. Each spindle is easily removable without disturbing the others. An important feature of the new spindle assembly is the floating lower bearing, which permits the spindle to adjust itself to variations and eccentricities in loads and to maintain rotation in its gravity axis. Vibration is eliminated. (This construction is also available in the smaller-size spindles for replacements.) More uniform spindle speeds are obtainable now than heretofore, resulting in uniformity of yarn size, with variation less than the standard trade allowance.

Ball bearings are used in the accelerated-speed loose pulley, rim-band carrier sheave, rim-band tightener sheave, and all cylinder boxes. The latter are of the self-aligning type, to take care of any misalignment which may occur, over a period of time, due to settling of the floor. Roller bearings are used in the draw-in rope sheaves, quadrant sprocket chain sheave, and carriage wheels. All are equipped with Alemite fittings.

The center cylinder shaft, draw-in shaft, draft-scroll shaft and main driveshaft are made of heat-treated steel of high tensile strength. Roping delivery-drum shafts are of the through type. The bottom rolls are screw-jointed polished steel, with steel top rolls.

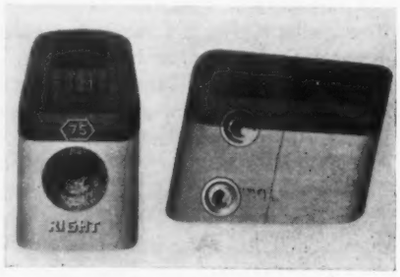
Main driving gears are designed for adequate strength, special alloys being used where necessary. The quadrant circle gear and quadrant pinion gear are made of Zee metal, as are the draw-in clutch, small double draw-in gear, ease-up worm, back-off ratchet gear and cylinder gear. Rim-band pulleys are made of special cast iron of high strength.

Other features include heavy prime coke tin cylinders, heavy gage sheet metal roping drums, and the sturdy, well braced selected wood carriage.

The manufacturers point out that Mammoth packages can be attached to Giant-package machines with no major changes in design, the only parts affected being spindles and faller fingers; also that addition of the Mammoth-package mule rounds out a complete line of bobbin sizes ranging from 8 in. to 15 in. in length and up to 3⅛ in. gage.

Improved Loom Picker

Improved pickers made of two plies of durable oak leather have been developed by the Graton & Knight Co., Worcester, Mass. The weaker or grain section has been split off, leaving only the rugged flesh section, which is said to give the picker collar at least 75% more strength than those made in the single-ply design. A feature of importance is the adoption of a unique rhomboid shape designed to afford at least 20% increased contact with the picker stick. The contact length on the outside of the stick has been

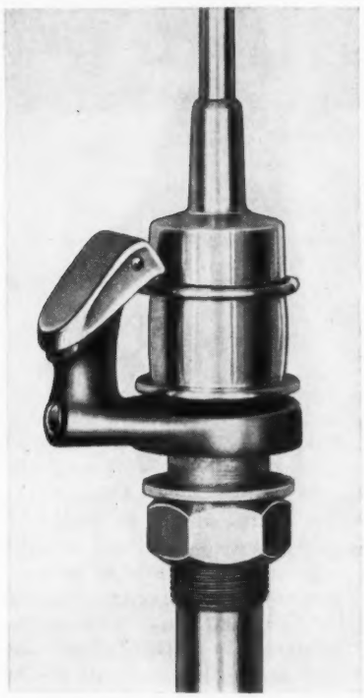


Loom Pickers (Graton & Knight)

increased from 1 to 1¼ in. The increased contact area, combined with the resulting longer life and more secure fit, insures more economical service and fewer shutdowns for picker adjustment or replacement. Less stretch in the collar is an added benefit gained by the new design. With these pickers, the company supplies a small metal gage to enable the loomfixer accurately to check the size of the stick, so that the pickers will give the most economical service. The new pickers are known as Graton & Knight 75.

Spindle-Base Dust Cap

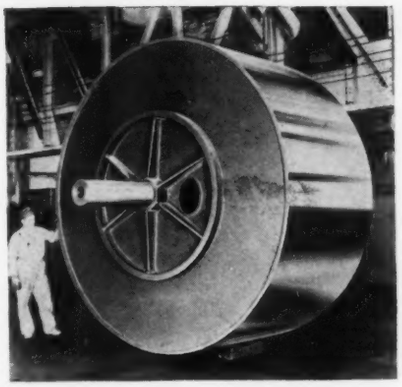
A newly-designed spindle-base dust cap now being offered by Saco-Lowell Shops, Boston, is said to be practically dust- and lint-proof. It was



Dust Cap (Saco-Lowell)

found the ordinary type of dust cap lacked the means of attaining a perfect closure, especially in those mills which use an air-cleaning system in the spinning room, or where an abnormal amount of lint is produced. Under such conditions, dust and fine lint crept under the closure and were gradually drawn into the base; also when new oil was added, the influx of oil had a tendency to carry some lint and dust into the base.

In the new type of dust cap, deep, outside protecting skirts prevent entrance of lint or dust. The caps are made of hardened-steel and are therefore light and yet unbreakable, easily cleaned, and of good appearance. The new cap can easily be applied to existing spindles.



Dryer (Lukenweld)

Welded Steel Dryer

A new type of welded steel dryer has been developed by Lukenweld, Inc., division of Lukens Steel Co., Coatesville, Pa. It operates with steam or other heating media, and is capable of providing controlled steam distribution at pressures up to 150 lbs. It can be manufactured in all sizes up to 15 feet in diameter, with shell face size limited only by transportation restrictions. All sizes are thoroughly furnace - stress - relieved after welding, thus eliminating welding stresses and the possibility of warping in service.

The Lukenweld steel dryer is made in either single- or double-shell construction. In the single-shell type, the heating medium circulates within the dryer drum. In the double-shell construction, the steam is confined in compartments in the jacket formed between the inner and outer shell. Each compartment is individually supplied with steam. The condensate is automatically and continuously drained off through outlets provided for the purpose.

In both the single shell and double shell type of dryer, the outer or drying shell is made from a specially-developed close-grained steel which can be machined, ground and polished to give a fine drying surface. Where desired, the dryer can be furnished with a lustrous, non-rusting chromium plated shell.

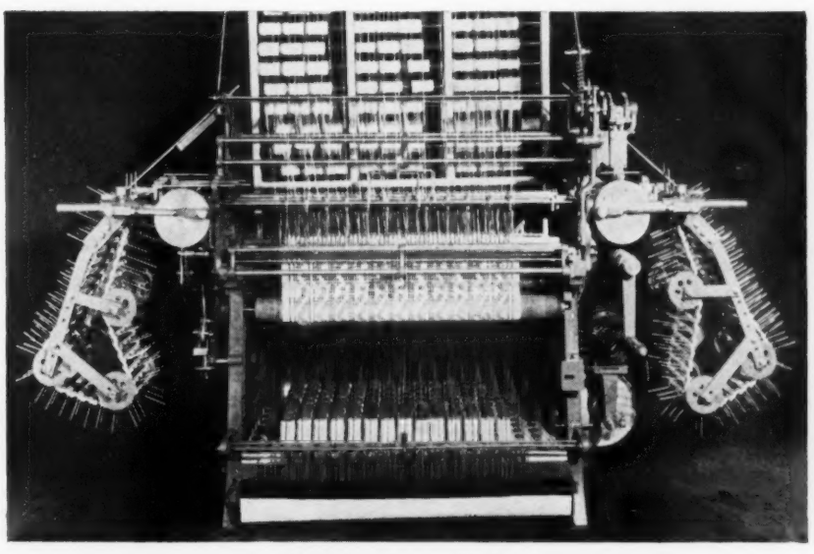
Knitting Loom

Engineers of Cidega Machine Shop, Inc., 141 West 20th St., New York, have designed a new and improved knitting loom, known as type B, for producing knitted fabrics. The manufacturers assert that this is the fastest loom of its kind and that it is unique in its ability to knit the smallest mesh of any loom of its kind.

Fabric produced by the loom consists of straight, individual lines of loops forming a "chain"; the filling, or design, is laid back and forth between these lines of "chain." Latch and spring-beard needles of No. 12 gage are used and are spaced 1/10-in. apart. Fine nets of 1/10 or of larger mesh are produced with accuracy of stitch and spacings.

An automatic stop insures against damage of product, bringing the loom to an immediate halt if a warp thread breaks or a spool runs out. Eight filling bars are provided, each actuated individually by a pattern chain that reciprocates from both sides of the loom. Duplication is obtained by a multiplier that reverses the direction of travel of these pattern chains according to the pattern to be produced.

The loom can be operated at one round or stitch per revolution or double round or two stitches per revolution. The pattern chain can be made to operate in alternative mo-



Knitting Loom (Cidega)

tion or simultaneous motion and the length of travel can be adjusted to conform to best operation. Speed to 85 r.p.m. is continuously obtained on single round. On double round the speed (actual number of rounds or stitches) can be increased up to 110 r.p.m., producing an average of 13 yd. per hr.

The take-up gear arrangement is of the ratchet type and the ratio of gears and roller is computed so that the number of teeth on the ratchet corresponds with the number of stitches or picks in 1-in. of cloth. A clutch and flywheel combination on the driving side and a flywheel on the other side give the machine necessary balance and freedom from vibration. Provision is made for installation of up-to-the-minute attachments for special design work Most popular sizes of the looms are from 39½ in. to 54 in. (actual needle beds), but they can also be furnished in larger sizes.

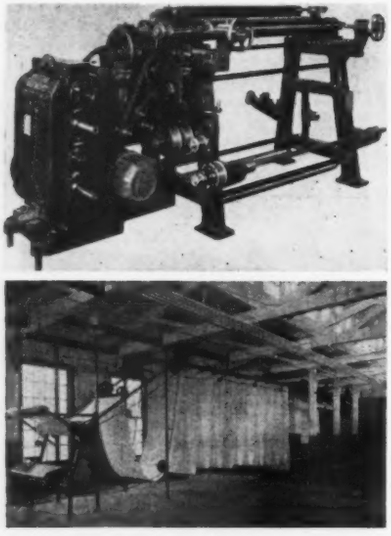
The loom is said to be able to use equally well all types of yarns; also beads, cellophane, horsehair, artificial straw, braid, Lastex, wire, paper, etc. Its products include curtains, bedspreads, yard goods, tablecloths, novelty scarfs, upholstery, drapery, millinery and curtain trimmings, collars, cuffs, belts, casket covers, wash cloths, dish cloths, etc.

Lacquer Printing Machine

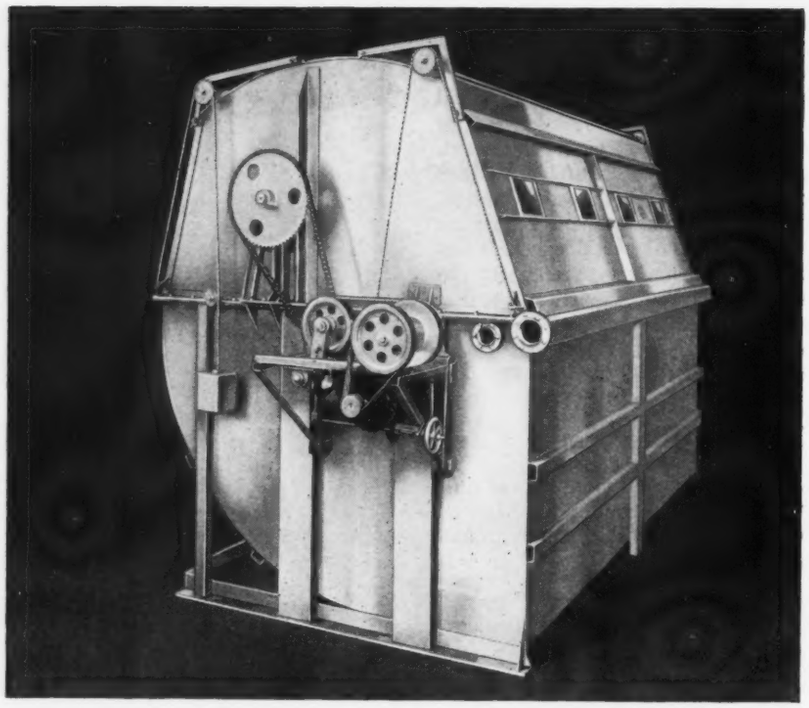
A new lacquer printing machine has been developed recently by Tenny & Hoffman, Inc., Paterson, N. J. The machine is designed to do single-color surface printing on any kind of cloth, using standard W-bore copper shells which have the pattern engraved on them. Lacquer is furnished to the engraved roll by means of a traveling doctor knife mounted over the roll. This knife also cleans the roll. The machine is motor driven and has a variable speed ranging from 8 to 64 yd. per min.

After printing, cloth leaves the printing machine and passes to a festooning machine which is suspended from the ceiling. The cloth is formed into loops automatically and carried, in loop form, 75 ft. This festooning machine will hold approximately 3,500 yd. of cloth. At the end of the festooning machine the cloth is rolled on a wooden shell.

It is stated that, with this equipment, no other machinery is required, after printing and festooning, with the exception of that used to prepare fabric for shipment.



(Upper) Printing Machine. (Lower) Festooning Machine (Tenny & Hoffman)



Piece Dye Kettle (Hunter)

To Run Dye Beams

The super-speed warper made by the Barber-Colman Co., Rockford, Ill., may be used for the winding of dye beams where low and uniform density of the yarn mass is required, by reversing the action of the anti-bounder device which, when winding section beams, holds the beam firmly with uniform pressure against the drum. When reversed, it supports the weight of the dye beam and permits it to have only sufficient contact with the drum for driving. These dye beams may be wound at relatively high speeds due to the low yarn tension, since no drag is applied to the yarn and the delivery is over the end of the cheese.

Piece Dye Kettle

A totally-inclosed, all-stainless-steel dye kettle is the newest addition to the wide line of piece-dye machines manufactured by James Hunter Machine Co., North Adams, Mass. The new dye kettle, known as Model N, with its Vari-speed drive, and inclosed bar or hump reel, is said to be readily adaptable to handling woolen, worsted, pile and plush fabrics, cottons, blankets—in fact, practically any material that can be dyed in the piece. Also, it is stated that the equipment can be built to accomplish bleaching as well as dyeing, if such is desired.

It is asserted that, being totally inclosed, the Model N assures users of a 25 to 35% steam saving over open kettles, and that this type kettle is practically free from deterioration and wear, and eliminates necessity for "boiling out" between colors.

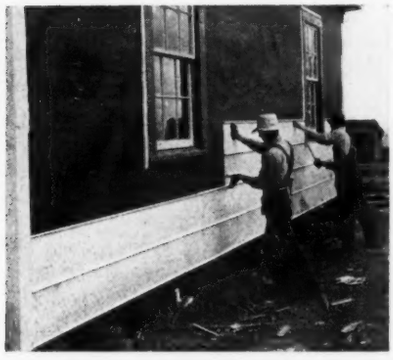
Steel-Clad House Construction

United States Steel Corp., through its subsidiary Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has recently announced its Steel Clad type of house construction. A wood frame of standard design is used in

Steel Clad house construction and standard stock steel sheets are used for outside and inside wall finish and roof. Floor plans are not standardized; any size house with any number of rooms, and with partitions spaced as desired, can be built.

It is stated that houses of this type require neither special building tools nor specially trained workmen, and that they can be built at a price comparable to any ordinary well-built wooden house of similar size.

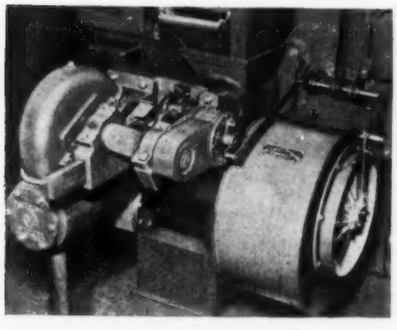
Special advantages claimed for houses of this type are low initial cost and small depreciation; savings in fuel—actual tests are said to have proved that a properly insulated Steel Clad house will reduce fuel cost 20 to 40%; excellent resistance to fire, lightning, termites, and vermin.



Steel Clad House (U. S. Steel)

Adjustable Stoker Feed

A new adjustable feed for stokers is now being offered by Detroit Stoker Co., Detroit, Mich. The adjustable feed can be applied to existing installations when desired. It can be operated either manually or automatically and is said to make possible extremely sensitive control of fuel feed to the furnace, from zero to maximum capacity. The adjustable feed is simple, compact, fully inclosed and ruggedly constructed.



Stoker with Adjustable Feed (Detroit)

NEW DYES & CHEMICALS

Sulphur Dyes

The following new products have been announced by E. I. du Pont de Nemours & Co.: Sulfogene Bordeaux 2RN Conc., the brightest and bluest sulphur bordeaux yet developed by Du Pont; it can be applied as a self-color, but is more generally employed in combination as a reddening and brightening element. Sulfogene Direct Blue 2RCF, a sulphur color yielding bright, reddish shades of navy blue; it is a direct-dyeing, non-bronzing blue, suited to dyeing pieces in the jig.

National Dye

National Aniline & Chemical Co., Inc., announces the following new product: National Fast Acid Brown RG, a neutral-dyeing acid color suitable for application to wool, and pure and tin-weighted silk; it is especially recommended for producing brown shades on silk hosiery; fastness to light, washing, sea water, and perspiration is very good.

Finishing Assistant

A new finishing assistant has been announced by E. I. du Pont de Nemours & Co., Wilmington, Del. This compound is specially sulphated fatty alcohol, known as Avitex M. It is designed primarily as a softening agent for use with high concentrations of epsom salt, such as are employed in the preparation of heavily-weighted finishes where the stiffening effect of starch products or minerals is to be avoided. The new product is said to form clear, stable emulsions, in the presence of epsom salt, which show no separation on prolonged heating, thus eliminating formation of oil spots on fabrics and loss of material from the bath.

Hosiery Finishes

Scholler Bros., Inc., Philadelphia, announces that its line of water-repellent finishes for hosiery formerly sold under the trade name "Brosco" will be available in the future under the registered name "Dura Bond." The products themselves have undergone no change.

General Dyes

General Dyestuff Corp. announces the following products: Diazo Brilliant Scarlet 5BLN Extra, a new dye which can not only be diazotized but also can be coupled with Nitrazol CF; diazotized and developed with Developer A, it yields clear, bluish scarlet shades on cotton and rayon; when coupled with Nitrazol CF, distinctly yellower shades result. Supramine Red BLL, a new acid dye, which in fastness to light surpasses Supramine Red B and BL, which are similar in shade.

NEW PUBLICATIONS

FUNDAMENTALS OF TEXTILES — A workbook; Edna A. Jacobsen and Helen E. McCullough, John Wiley & Sons, 440 Fourth Ave., New York; $1.50.

This book is intended primarily for use of students of home economics. It contains exercises covering raw materials; yarns; and construction, identification, analysis, choice, use, and care of fabrics. The work sheets provide space for mounting of samples and insertion of data on characteristics of the various textiles studied.

THE LOST COLONY, by Paul Green; University of North Carolina Press, Chapel Hill, N. C.; 138 pages, $2.00.

In 1587 Sir Walter Raleigh sent a band of colonists to Roanoke Island off the coast of North Carolina. Three years later when John White returned to Roanoke Island the colony had disappeared without leaving a trace.

Paul Green has taken the known facts and traditions of this romantic mystery and by the creation of character and evocation of atmosphere has breathed life into a shadowy legend. The resulting combination of drama and pageantry had its initial celebration at Manteo, N. C., July 4 this year, the 350th anniversary of the birth of Virginia Dare.

Those engaged in southern industry will find a particular interest in this romantic story of the past.

MODERN PLASTICS HANDBOOK, Issue October, 1937; Breskin & Charlton Publishing Corp., 425 Fourth Ave., New York. $2.

With the increasing use of synthetic resins and other plastics in the finishing of textiles, there has arisen a need for data on the proper-

ties of plastics, a buyer's guide of chemicals used in the production of "plastic" finishes, and a directory of trade names of plastics. This handbook issue of *Modern Plastics* provides these, plus numerous articles on the use of various types of plastics in the textile and other industries. One article is devoted entirely to synthetic resins for textile industry.

EXECUTIVE'S DATA BOOK, 1938; Prentice-Hall, Inc., New York; Price $1.00.

This handy compilation of facts which the average executive will want to know grew out of the "Little Black Book" carried by Richard P. Ettinger, president of Prentice-Hall, Inc. In addition to this information the book includes diary pages for daily memos and appointments.

ANNUAL COTTON HANDBOOK, 1937; Comtelburo Limited, London, England.

The 67th year of publication finds this handbook still going strong. It includes daily cable records of American, East Indian and Egyptian crops, together with Liverpool, Brazilian, Continental and other statistics.

Writes on North Adams History

Lee Sherman Cass, sales manager of James Hunter Machine Co., North Adams, Mass., is the author of an interesting article on the industrial history of North Adams, under the title of "Industry's Map of Massachusetts" in the January issue of* Industry, *published by Associated Industries of Massachusetts.

Naturally most of the article is devoted to the development of textiles and allied industries, but North Adams does not lack for diversification because, in addition to textiles, it produces electric condensers, textile machinery, leather and leather products, paper and wooden boxes, shoes, neckwear, bricks, etc., etc.

It is pointed out in the article that James Hunter Machine Co. is operated by the same family and on the same site as its small beginnings in 1847.

NEWS OF SUPPLIERS

Edwin Farnham Greene-McCord Corp., with headquarters at 51 Madison Ave., New York, has been organized to consolidate the activities heretofore carried on by Mr. Greene, the Enderly Corp., Mr. McCord, and McCord, Inc. For several years Mr. Greene and Mr. McCord have cooperated in several business transactions and the purpose of this merger is to provide a larger and more effective organization to carry on the business of selling, liquidating, reorganizing and consolidating industrial properties, principally in the textile field. Mr. Greene was for many years head of Lockwood Greene & Co. and of the Pacific Mills. During the last few years he has been president of the Enderly Corp. in which capacity he has handled the sale of the Hockanum Mills to M. T. Stevens & Sons Co., liquidation of the cotton mill machinery and print works equipment of the American Printing Co., Fall River, Mass., and the United Piece Dye Works, Lodi, N. J. Mr. McCord has been identified with the textile industry throughout his business career, getting his first experience in the finishing business at Sayles Bleacheries in Rhode Island. In 1918 he joined Bragdon, Lord & Nagle Co. and for 10 years was head of their mill property department which handled most of the large sales on mill properties during that time. In 1928 he started in business for himself and during the last 10 years has had broad experience in selling and liquidating properties.

H & B American Machine Co., Pawtucket, R. I., announces that Kingsland Dunwoody has been appointed general manager of that company. He was graduated from the U. S. Naval Academy in 1917, and about 1924 entered industrial engineering in a consulting capacity, coming into close contact with many industries including textiles. Six years ago he joined the organization of the S. A. Woods Machine Co., South Boston, Mass., builders of woodworking machinery, and he will continue to function as vice-president and general manager of that company in addition to carrying out his new responsibilities. Mr. Dunwoody states that a major phase of his program for the H & B Company is the improvement and further development of its numerous products, working in close association with President E. L. Martin.

Kaumagraph Co., New York, announces the appointment of W. P. Raiford, P. O. Box 312, Durham, N. C., as sales representative for the Southeastern District, comprising the Carolinas, Virginia and West Virginia. Mr. Raiford was formerly with sales department of Golden Belt Mfg. Co., and has had many years of textile manufacturing experience giving him a practical viewpoint on the solution

Fairbanks, Morse & Co., Chicago, describes in the January issue of its house organ, a new motor installation at Mill No. 2 of Georgia-Kincaid Mills, Griffin, Ga. The installation includes 43 Fairbanks-Morse 3-phase, 60-cycle, 550-volt, ball-bearing motors. Of these, 30 are 10-hp. motors, each mounted on a Rockwood base and driving a spinning frame through an endless, flat-leather belt and pulleys on close centers. Seven 25-hp. and two 15-hp. motors all drive looms. They are mounted on Rockwood bases in a row on the first-floor ceiling, the smaller ones next to the building walls and the larger ones between. Each 25-hp. motor drives, through a single shaft with pulleys and belts, a total of 60 looms: 30 in two rows on the second floor, above, and 30 more in two rows on the first floor, below. The shaft is located centrally between the four rows of looms, and the drive belts connecting the looms form a "sling" in which the shaft "floats" with a minimum of friction in the hangers. Two 7½-hp. motors are mounted overhead and drive slashers.

John F. Tinsley, general manager Crompton & Knowles Loom Works (center) telling the New England Industrial Development Conference at Boston on Jan. 11 that plant modernization spells increased net earnings and so builds employment and the purchasing power of job holders. At left, Prof. C. L. Norton, Massachusetts Institute of Technology, and at the right, John P. Kobrock, chairman of the meeting held under the auspices of the New England Council to show how the northeasterners are grappling with industrial competition through encouragement of small manufacturies, establishment of branch plants of national enterprises, diversification of products and capitalization of mechanical skill.

of every type of identification and packing problem.

General Electric Co., Schenectady, N. Y. announced the following executive changes: Chas. E. Wilson has been elected executive vice-president, Nathan R. Birge has been elected vice-president and John F. Cunningham, supervisor of production, has been appointed assistant to the vice-president in charge of manufacturing.

Steel Heddle Mfg. Co., Philadelphia, announces that Vernon Graff has been made assistant to C. W. Cain, district manager of the Greensboro, N. C. office.

E. O. Spindler has resigned as treasurer-manager of Dubied Machinery Co., after 30 years' affiliation and has opened his own office at 40 Worth st., New York, where he will continue to handle Saupe High Speed Tricot machines and other warp knitting and allied machinery. **G. Sandri,** who has been associated with Dubied's European offices for 10 years succeeds Mr. Spindler as treasurer-manager.

Jenkins Bros., New York, have opened a new office and warehouse building at Atlanta, Ga. which will serve as headquarters for the Southern district. The new building has 9,000 sq. ft. of floor space and carries a complete line of valves. A warehouse under the Atlanta office was opened in Houston, Tex., about Feb. 1.

Graton & Knight Co., Worcester, Mass., announces that J. E. MacMahon, formerly assistant sales manager, has been appointed general sales manager to succeed C. O. Drayton, recently resigned.

Apco Mossberg Corp., Attleboro, Mass., announce that, with reorganization plans now completed, that reel and beam manufacturing corporation has become the Apco Mossberg Co., headed by Lee Smith as president and treasurer. Other officers are: William Blackburn, vice-president in charge of manufacture; John G. McGreevy, vice-president in charge of sales; C. D. Smith, asst. treasurer.

Union Special Machine Co., Chicago, has completed its seventh expansion in 57 years. Work was started last year on a new building to occupy the quarter block at the northeast corner of Orleans and Kinzie Streets; building was completed at the start of this year and various departments have moved in.

Atwood Machine Co., Stonington, Conn., announces that Arthur L. Lewis, general sales manager, has been elected vice-president. He will continue in charge of sales. Other officers are Frank R. Dodge, chairman of the board and treasurer; Franklin R. Hoadley, president; N. Cary Hayward, secretary and assistant treasurer; and George N. Whitford, assistant secretary.

Jones-Dabney Co., Louisville, Ky., announces appointment of H. M. Johnson Co. to handle their synthetic resin and lacquer-base sales in the eastern territory. H. M. Johnson, who has organized a new technical sales organization, will have his main office in Newark, N. J., and maintain direct service in the Boston, New York, Philadelphia and Baltimore territories.

The Timken Roller Bearing Co., Canton, O., announces that following the resignation of Ernest Wooler, chief engineer, A. L. Bergstrom has been appointed executive engineer to coordinate some of the varied engineering activities of the company.

New York & New Jersey Lubricant Co., New York, announces the appointment of Falls L. Thomason as southern district manager, with headquarters at Charlotte, N. C. He succeeds the late Lewis W. Thomason, his father.

Lewis-Shepard Co., manufacturers of materials handling equipment, Boston, announces that George H. Corliss, advertising and sales promotion manager for the last four years, has been appointed regional manager with headquarters in Los Angeles.

American Rolling Mill Co., Middletown, O., has appointed Murray B. Wilson, with the firm since 1923, as manager of New York sales district.

Graton & Knight Co.'s trailer equipped with laboratory, electric light plant and plant equipment from six industries as described in November issue of TEXTILE WORED.

THE PERSONAL PAGE

Luther H. Hodges, with 10 years of continuous service in the manufacturing division of Marshall Field & Co., and for the last two years production manager for the 20-odd mills of this company, has been made general manager of the manufacturing division to succeed J. P. Margeson, Jr. Mr. Hodges assumed his new duties Feb. 1 and in addition to having the responsibility for all phases of production work, will have charge of the three sales offices of the company in New York. He will maintain an office at 200 Madison Ave., New York, but will continue to make his home in Spray, N. C.

Charles H. Dimick has been elected president of Textile Dyeing & Printing Co. of America, which company has its principal plant at Fair Lawn, N. J., and in addition to the duties incident to this position, Mr. Dimick will continue to act as general manager, to which position he was appointed last June.

Donald Comer, president of Avondale Mills, Birmingham, Ala., and former president of the American Cotton Manufacturers Association, was elected chairman of the executive committee of Southeastern Cottons Inc., Jan. 15, at a meeting in Charlotte, N. C.

W. B. Dake was elected president and **R. S. Henley,** secretary-treasurer, of Decatur (Tenn.) Hosiery Mill, Inc., at a recent meeting; they were also elected directors, together with **J. W. Lillard, W. A. Pulens** and **Geo. C. McKenzie.**

Harold C. Barney has been appointed resident-manager of Hartsville Dye Works, Hartsville, S. C. Mr. Barney was formerly resident manager of the branch of the U. S. Finishing Co. at Sterling, Conn., of which company the Hartsville Dye Works is a subsidiary.

Alfred Pate has resigned as treasurer of the Charlton Mills, Fall River, Mass. No successor has yet been chosen.

Carl J. Beaver has been elected secretary and treasurer, and **John H. Rutledge, Jr.** assistant secretary and a member of the board, at a recent meeting of stockholders of China Grove (N.C.) Cotton Mills.

Frank B. Arnzen has been elected vice-president of the

Luther H. Hodges

Lincoln Bleachery & Dye Works, Lonsdale, R. I. He will have headquarters at the plant, but will spend a considerable part of his time at the New York offices.

W. Douglas Walker, of Douglas Walker & Co., raw silk brokers, New York, and vice-president and governor of the Commodity Exchange, New York, has become associated with the firm of Eric & Drevers, brokers, New York.

A. H. Eddy, of the Weybosset Mills, Olneyville, R. I., of the American Woolen Co., has been made resident manager of the South Webster, (Mass.) Mills of that company, succeeding **Fred R. Lane,** who will have another as yet unnannounced post with the company.

W. W. Viebahn, of Congoleum Nairn, Inc., Philadelphia, has been elected president of the Philadelphia Carpet and Upholstery Club, succeeding **W. R. Lavis,** retired upholstery manufacturer.

Irving Weed and **Henry Schniewind, 3d,** will be jointly associated with management of the neckwear department of Susquehanna Silk Mills, New York, following resignation of **H. G. Lightbody.**

H. M. Shaw, secretary of the Derby, Eng., Chamber of Commerce, will succeed **A. B. Ball,** this month, when Mr. Ball retires as secretary of the Silk Association of Great Britain and Ireland, Inc. Mr. Ball held the post since October, 1919.

G. L. Ivie, has been placed in charge of Group I domestics, of Marshall Field & Co., manufacturing division, New York, succeeding **P. E. Doblin,** who has resigned. Mr. Ivie has been with the firm for 20 years.

Thurmond Chatham, of Winston-Salem, N. C., president of the Chatham Mfg. Co., was appointed a member of the North Carolina State Board of Conservation and Development, **Gov. Clyde Holy** announced Jan. 11; he succeeds **Harry Lindsay,** of Spray, N. C.

John K. Voehringer, Jr., Greensboro, president of the Mock-Judson-Voehringer, Inc., sailed from New York city, Jan. 29, for a Mediterranean cruise of 40 days.

Fred Tattersall, formerly with the Pond Lily Finishing Co., New Haven, Conn., has become divisional superintendent for the Rock Hill (S.C.) Printing & Finishing Co.'s color, printing and engraving department.

A. A. Whitener, Hickory, N. C., has been elected president and treasurer of the Rudisill Spinning Co., Lincolnton, N. C., which has been reorganized and its offices moved to Hickory from Cherryville, N. C. **T. Manley Whitener,** son of Mr. Whitener, has been named vice-president and secretary of the mill.

Leonard S. Little, president and general manager of the U. S. Finishing Co., Providence, R. I. has resigned that post, and also like positions in the company's subsidiary concerns, the Queen Dyeing Co. of Providence and the Hartsville Print & Dye Works, Hartsville, Ga.

John H. Lacoutre, president and treasurer of the Guerin Mills, Inc., is temporary chairman of the executive committee of the recently organized Woonsocket, R. I., Association of Manufacturers.

Charles R. Hook, president of the American Rolling Mill Co., Middletown, O., on Jan. 26 was elected president of the National Association of Manufacturers, succeeding **William B. Warner,** president of the McCall Corp., New York, who was elected chairman of the N. A. M. Board. **C. M. Chester,** chairman, General Foods Corp., who served as chairman of N. A. M. during 1937, was elected chairman of the Association's executive committee.

C. Walter Geier, superintendent of weaving at the Duplan Silk Co., Hazleton, Pa., resigned that post last month. Mr. Geier served many years with that firm, having started his career there an an apprentice. His future plans have not been announced.

W. V. E. Terhune, New York, has been elected president of the Virginia Woolen Co. at Winchester, Va., succeeding the late H. B. McCormac. Mr. Terhune had been vice-president.

Walter K. Porzer has resigned as general director of Associated Wool Industries, New York, to resume practice as marketing counsel, under the name Walter K. Porzer Associates. Activities of Associated Wool Industries will be carried on as formerly under the direction of the Executive Committee.

W. N. Banks, of Grantville, Ga., has been elected chairman of the carded yarn group of the Cotton-Textile Institute to succeed **Don P. Johnston,** of Wake Forest.

R. H. Underwood has resigned as superintendent of Carolina Dyeing & Winding, Inc., Mount Holly, N. C. **L. E. Remick** has been appointed to succeed Mr. Underwood. Mr. Remick has been in charge of the dyeing department. **Paul Howard** has been appointed as manager of the dyeing department, succeeding Mr. Remick.

Dr. Alexander Dorner, former curator of the Landes Museum, Hanover, Germany, has been elected director of the museum at the Rhode Island School of Design, Providence, suceeding the late L. Earle Rowe.

TEXTILE CALENDAR

- *Knitting Arts Exhibition, Commercial Museum, Philadelphia, April 25 to 29, 1938.*
- *National Association of Wool Manufacturers, Annual meeting, Hotel Commodore, New York, Feb. 16, 1938.*
- *National Association of Hosiery Manufacturers annual convention, Commercial Museum, Philadelphia, April 27, 1938.*
- *Underwear Institute annaul convention, Commercial Museum, Philadelphia, April 28, 1938.*

Rosser J. Smith, vice-president of the Bank of Manhattan Co., New York, has resigned that post to become vice-president of Southeastern Cottons, Inc., New York. As a banker, Mr. Smith specialized in handling cotton textile accounts and is well known in that industry.

Leonard Walsh, general manager of Plymouth Finishing Co., Fall River, Mass., has been elected president, succeeding **Preston H. Hood,** who continues as director of the company. **C. T. Pardey,** formerly of Mt. Hope Finishing Co. has been made New York agent for Plymouth.

H. E. Bishop, formerly executive secretary of the Throwsters Research Institute, has become affiliated with Berkeley Products, Inc., New York, manufacturers of textile processing compounds, as vice-president in charge of sales.

Julius H. Lippmann, for 10 years with the Cohn-Hall-Marx Co., New York, has joined the sales staff of Scheuer & Co., New York.

Charles A. Cannon, president of the Cannon Mills Co., Kannapolis, N. C., has accepted the office of first president of the Fishburne Military School Alumni Association. Mr. Cannon was graduated from this school in the class of 1911.

O. C. Altmaier has been elected president of the Columbus (O.) Coated Fabrics Co., Columbus.

Fred W. Steele, general manager of Pierce Bros. Ltd., New Bedford, Mass., has been named one of a committee of five to direct a campaign of industrial development for New Bedford.

William S. Downey, attorney, of New Bedford, Mass., has been named trustee of the Neild Mfg. Co. of that city.

Daniel Raub is president of the new R. & K. Silk Corp., Bethel, Conn. Other officers are: vice-president, **Elizabeth Raub;** secretary, **Etta Kent;** and treasurer, **George Kent.**

Garner H. Tullis has been elected president of the New Orleans Cotton Exchange. He succeeds **Chas. E. Fenner,** of Fenner & Beane, New York.

B. L. Fisher, Martinsville, Va., has been elected president of the Angle Silk Mills, Inc., Rocky Mount, Va., succeeding **J. P. Pell,** who will continue to serve as treasurer and general manager of the mills.

C. W. Johnston has retired as president and treasurer of the Highland Park Mfg. Co., chain of mills, with main unit at Charlotte, N. C. His son, **R. Horace Johnston** has succeeded him as president. Mr. Johnston has been president of the mills for 43 years.

J. H. Wisselink, of Holland, internationally known textile manufacturer, recently toured the textile and cotton sections of the United States.

J. L. Parrish has been appointed chief supervisor of plant No. 2 at the Old Hickory, Tenn., rayon division of the E. I. du Pont de Nemours & Co., Inc.

R. H. Neil is now overseer of put-up department of Phenix Mills, Columbus, Ga., in addition to his other duties of overseer of designing.

James Oates, formerly superintendent of Cherry Cotton Mills, Florence, Ala., is now general overseer of spinning, spooling, twisting, winding and warping at Sibley Mfg. Co., Augusta, Ga.

B. S. Askew has resigned his position with Macon, Ga., Textiles, Inc., and has become superintendent of the Taylor plant of Bibb Mfg. Co. at Reynolds, Ga., succeeding **Rufus Smith,** who has resigned.

Arthur D. Mansell is now supervising the finishing department of the Lincoln Mills, Pascoag, R. I.

Frank E. Clark is now in charge of the finishing department of the American Textile Woolen Co., Sweetwater, Tenn.

S. R. Hogg is now shift superintendent in spinning at the Osprey plant of the Bibb Mfg. Co., Porterdale, Ga.

E. E. Swenson, formerly superintendent of the Buffalo, N. Y., unit of the E. I. du Pont de Nemours & Co., has succeeded **Willis Shackelford,** manager of the Amphill, Va., unit of the company's rayon department, who has been promoted to assistant manager of the acetate division with headquarters in Wilmington, Del.

W. J. Seiman is now serving as head of the personnel department of American Bemberg Corp. and North American Rayon Corp., both of Elizabethton, Tenn., succeeding the late R. J. H. Worcester.

Tom Nicholas has become manager of the Atlanta, Ga., office of the Pepperell Mfg. Co.

James R. Turnbull, director of sales promotion and advertising for Marshall Field & Co., manufacturing division, resigned, effective Jan. 15. **Don Mitchell,** general sales manager of the Field manufacturing unit, has also resigned.

John R. Murphy has resigned as personnel manager

John P. Maguire & Company
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Supervision of credits and finance is a highly specialized function in which we can be of service to you.

We check credits, assume credit losses, and advance in cash, the net value of shipments as made.

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CLINTON STARCHES

For All Textile Purposes

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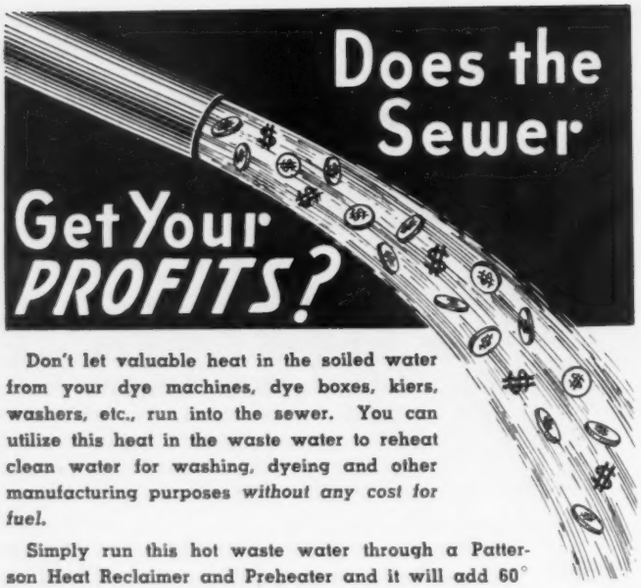

Don't let valuable heat in the soiled water from your dye machines, dye boxes, kiers, washers, etc., run into the sewer. You can utilize this heat in the waste water to reheat clean water for washing, dyeing and other manufacturing purposes *without any cost for fuel.*

Simply run this hot waste water through a Patterson Heat Reclaimer and Preheater and it will add 60° or more to the temperature of cold incoming water.

Every 45,000 gallons of soiled hot water you run through a Patterson Reclaimer will heat as much clean water as a ton of coal.

Note this letter stating that their Patterson Reclaimer has paid for itself in 4 years by reheating water 70 to 80°.

Without obligation one of our engineers will tell you what this non-fuel consuming preheater will do for you.

Write for full particulars and catalog.

WOOLRICH WOOLEN MILLS
JOHN RICH & BROS.
WOOLRICH, PA.

Oct. 9, 1935

Mr. P. F. Gilboy,
The Patterson-Kelley Co., Inc.
Brooks Bldg.
Wilkes Barre, Pa.

Dear Sir:

We have one of your reclaimers and preheaters, installed in 1931, and it is giving very fine satisfaction.

With the water temperature around 40, by running the water from our vats, we reheat this water 70 to 80 degrees and believe it has paid for itself since we have installed it to this time and can recommend it for durability.

Very truly yours,
WOOLRICH WOOLEN MILLS
Geo B. Ahl
Supt.

GBA/E

The Patterson-Kelley Co., Inc.

106 Burson St. East Stroudsburg, Pa.

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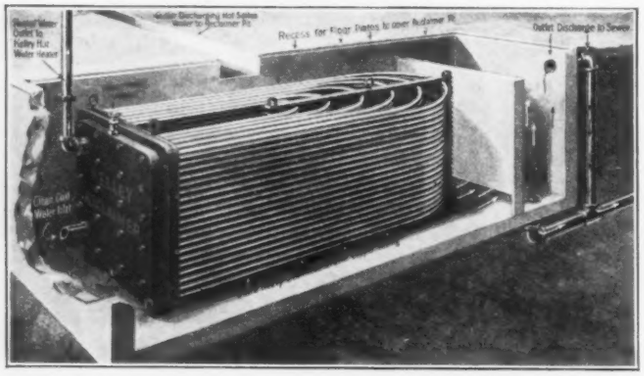
HEAT RECLAIMER
AND PREHEATER



of the Farr Alpaca Co., Holyoke, Mass. **Miss June L. Wasson,** purchasing agent, has been made personnel manager to succeed Mr. Murphy, while the duties of purchasing agent will be taken over by **Edward C. Purrington,** secretary.

Charles B. Jennings recently resigned as superintendent of the Edgeworth Mills of the M. J. Whitall Associates of Worcester Mass., and is now superintendent of the yarn mill of the Firth Carpet Co., Firthcliffe, N. Y.

Robert J. Frost has been named superintendent of H. T. Heywood Woolen Mills, Franklin, Mass. He was formerly designer and superintendent of Schuster Woolen Mills, East Douglas, Mass.

Raymond E. English, superintendent of Globe Mfg. Co., Pittsfield, N. H., for the last 12 years, has accepted a position with the Congress Shirt Co., Bath, Me. **Ronald M. Buffum** has succeeded him as superintendent of the Pittsfield plant.

E. P. Barnes has been elected superintendent of the mercerizing department of Dixie Mercerizing Co., Chattanooga, Tenn. He succeeds **Peter F. O'Neill,** resigned.

J. W. Davis has resigned as overseer of spinning at Jordan Mills, Inc., Columbus, Ga., and has become associated with Columbus Belting & Spool Co.

D. E. Sherrill has been appointed superintendent of Clyde Fabrics, Inc., Newton, N. C., succeeding **H. J. Woods** resigned.

James W. Stanley, formerly with the Merrimack Woolen Co., Lowell, Mass., has been appointed superintendent of the Talbot Mills, North Billerica, Mass., and **Otto Schopp,** previously with the Puritan Mills of the American Woolen Co., has been named overseer of finishing for the Talbot Mills. Other officials in the organization of the company are **Samuel A. McQuaid,** assistant superintendent and designer; **Richard Lanigan,** paymaster, and the following overseers: **David Grady,** picking; **George Hurst,** woolshop; **Daniel Cobb,** carding; **Bernard Featherston,** spinning; **Fred M. Wicks,** weaving; **W. E. Rowlandson, Jr.,** dyeing; **Sherman C. Blair,** power; and **Arthur Connell,** repairs.

Foster Dee Snell, Brooklyn, N. Y., addressed the Baltimore Section of the American Chemical Society Jan. 25 on the subject "Some Factors in Detergency."

A. S. Welsh, dyer, formerly of Hart & Foster, Philadelphia, is now in charge of dyeing at Farr Alpaca, Holyoke, Mass.

H. C. Kemball, mechanical engineer of Mather & Platt, Ltd., builders of dyeing and bleaching machinery, Manchester, England, is making an extended business trip to the United States.

M. H. Carter, formerly overseer of spinning at the Goodyear Tire & Rubber Co., Cartersville, Ga., has become overseer of carding and spinning at the Santee Mills, Bamberg, S. C.

K. M. Biggs, prominent business man of Lumberton, N. C., has been elected president of the Mansfield Mills, Inc., of East Lumberton, and the Jennings Cotton Mills, of North Lumberton. He succeeds **H. B. Jennings,** who designed Jan. 19 after being associated with the mills in an executive capacity since 1900.

W. T. Cheatham has been named secretary of the Stevens Mfg. Co., Burlington, N. C.

J. B. Cooper has been appointed vice-president in charge of production at the High Point (N.C.) plant of the Diaiond Full-Fashioned Hosiery Mill.

E. F. Bohannon, secretary and treasurer of the Mooresville (N.C.) Cotton Mill, lost his left hand recently as the result of an automobile accident.

James Oates, formerly of Selma, Ala., has become overseer of spinning, spooling and warping at the Sibley Mfg. Co., Augusta, Ga.

L. A. Graybill, manufacturing technologist for the Macon, Ga., plant of the Bibb Mfg. Co., has been transferred to the Bibb plant at Columbus, Ga.

W. O. Ruffin and **A. E. Thompson,** of Opelika, Ala., are now employed as overseer of weaving and overseer of carding, respectively, at Ocopee Textile Co., Whitehall, Ga.

George W. Smith has been promoted to second hand of bleaching at Muscogee Mfg. Co., Columbus, Ga.

Lewis Hines has resigned as overseer of the knitting department of the Excelsior Mills, Union, S. C., and has accepted the position of superintendent of the newly formed hosiery mill, the Excel Hosiery Mills, now under construction at Union.

Leonard England is now in charge of dyeing for the Union Bleaching Co., Greenville, S. C.

Philip L. Jackson has been placed in charge of wet finishing in the Mid-West Mills, Cedarburg, Wis.

Inez Boches, designer, has been appointed to conduct a course in textile designing at the State Trade School in Bridgeport, Conn.

J. Dewhurst has assumed the duties of overseer of dyeing with the Airlie Mills, at Hanover, Conn.

James Gannon is now supervising the finishing at the Cowan Woolen Co.'s plant in Lewiston, Me.

Frank Mastrangelo has been placed in charge of the finishing department of the Glenbrook Mills, at Muncy, Pa.

F. B. Fitch has accepted the position as overseer of dyeing for the Seneca (N. Y.) Knitting Mills.

Joshua J. Moore, formerly assistant superintendent of the knitting department of Wiscassett Mill, Albemarle, N. C., has resigned to become superintendent of the Rufus D. Wilson hosiery mills, Burlington, N. C.

J. F. Armstrong has become overseer of carding at the Kinston (N.C.) Textile Mills, Inc.

A. R. Thompson, formerly at Opelika, Ala., has become overseer of carding at the Oconee Textile Co., Whitehall, Ga.

B. W. Bingham has resigned as overseer of carding at the Brookside Mills, Knoxville, Tenn.

Wm. Bronson has been appointed assistant to the overseer of the dyeing department of the Muscogee Mfg. Co., Columbus, Ga.

Robert Fyfe has assumed charge of the finishing at the Columbia Woolen Mills, Columbia City, Ind.

George Mailloux is now superintendent of the dyeing, bleaching and finishing departments of the Lumb Knitting Co. at Pawtucket, R. I.

A. E. Mitchell, formerly of Eaton Rapids, Mich., is now in charge of the dyeing for the Columbiaville (Mich.) Woolen Mills.

John C. Kopasz has accepted the position as superintendent of the velvet dyeing department for the Dominion Silk Printing & Dyeing, Drummondville, Que.

Obituary

Frank H. Metcalf, aged 69, president of the Farr Alpaca Co., Holyoke, Mass., died there Jan. 4. He was born at Hamilton, Ont., and attended the Worcester Polytechnic Institute until illness forced him to give up school. As a young man he entered the Farr company employ, the concern having been founded by his father and uncle, and worked his way up from wool sorting to the treasurership and presidency. He relinquished the former office several years ago. Mr. Metcalf was also president of the Holyoke Valve & Hydrant Co., and held many important directorates including the Home Market Club and American Tariff League and membership in the Royal Society of Arts in England.

Horace M. Bunker, aged 65, of Auburndale, Mass., president of H. H. Bunker Co., cotton goods dealers with headquarters in New York, died in New York, Jan. 9. Mr. Bunker was a descendant of James and George Bunker, original Bunker Hill settlers of historic Revolutionary War days.

A. F. Kattermann, aged 74, founder and president, Kattermann & Mitchell, silk manufacturers, New York, died recently in Frankenberg, Germany, after an extended illness.

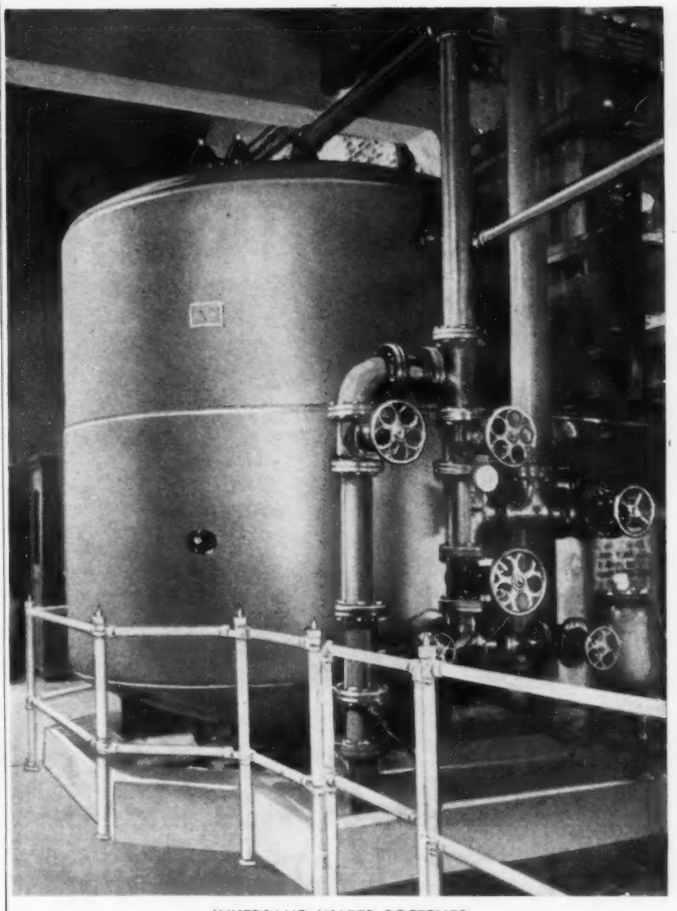
Darius Goff, aged 48, long a leader in the Blackstone Valley, R. I., textile industries, died at his home in Pawtucket, R. I., Jan. 6.

Col. William Greene Nightingale, aged 90, president and director of the Nightingale-Morse Mills, Inc., of Providence, R. I., and Putnam, Conn., died at Providence on Jan. 22. He entered the service of the Nightingale Mills as a young man, and, after the merger of the mills at Putnam and Providence, became president of the organization.

Frederick Ellsworth Kip, aged 76, formerly president of the Salts Textile Co., Bridgeport, Conn., died Jan. 24 at Montclair, N. J. Mr. Kip was born in Passaic, N. J. After years of service respectively with Fleitman & Co., New York, and Frederick Vietor & Achelis, New York, he became part owner of the American pile fabrics plant of the Sir Titus Salt's Co. at Bridgeport. Later he headed the Kip-Armstrong Co., and in 1902 purchased the Griswold Worsted Co., Derby, Pa., and was president for 30 years.

Dennis C. O'Shea, aged 65, president, O'Shea Knitting Mills, Chicago, died there Dec. 28.

James Cochrane, aged 87, founder and former partner in



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Like the proverbial Scotchman, the new Proctor Super Dryer for cotton and wool raw stock, linters, acetates, etc., is very thrifty. It does not waste anything and saves time, steam, power and floor space.

And like the Scotchman it is very rugged, can stand a lot of hard work and has a lot of endurance.

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PROCTOR & SCHWARTZ, INC.
PHILADELPHIA

the carpet and rug firm of Chas. P. Cochrane Co., Philadelphia, died Jan. 4, in St. Petersburg, Fla.

Fred C. Keller, aged 62, former vice-president, Keller Knitting Co., and of late Western representative of New York (N.Y.) Knitting Mills, Cleveland, O., died recently in that city.

Thomas Martin, aged 92, president of the Martin New York Tent & Duck Co., New York, died recently at his home in Jersey City, N. J.

W. G. Fisher, aged 69, veteran sales executive in the woolen and worsted industry and recently associated with H. A. Caesar & Co., New York, died recently at his home there.

Richard W. Ensign, Charlotte (N.C.) representative of the Foster Machine Co., and well known in the textile industry in that district, was killed recently in an automobile accident.

John N. Hahn, aged 70, president and general manager, Colonial Woolen Mills Co., Cleveland, O., died at his home in that city, Jan. 1.

F. W. Wakefield, aged 57, secretary, treasurer, and general manager, of the U S Bobbin & Shuttle Co., Lawrence, Mass., and well known through the textile industry for 30 years, died Jan. 17 at Lawrence, Mass.

Horace A. Keith, aged 75, founder of the former Brockton (Mass.) Webbing Co., died in Brockton on Jan. 18.

Karl Palme, aged 63, superintendent of the Alden Knitting Mills, Meridian, Miss., died recently at his home there.

M. Hazen Chase, aged 53, president of the Harris Silk Hosiery Co., Springfield, Mass., died suddenly Jan. 8 of a heart attack at his home in Holyoke, Mass.

George J. Cuthbertson, aged 70, president of the Renfrew Textiles, Ltd., Renfrew, Ont., died there recently.

Louis C. Gibson, for 31 years identified with the Brook Woolen Co., Simcoe, Ont., and manager for 15 years, died recently.

James H. Parrack, aged 82, for twenty-three years associated with the late Samel S. Clutton in operating the Clutton Woolen Mill, Vienna, Ont., died recently.

William P. Wood, aged 73, first superintendent of the Royal Weaving Co., and for many years superintendent of the then Pawtucket (R.I.) plant of the Manville-Jenckes Co., died at Pawtucket Jan. 14.

Julius A. Cline, aged 71, who established the Hickory (N.C.) Hosiery Mills in 1906, and long active in the hosiery industry died recently in Hickory.

Harry Ratcliffe, aged 65, superintendent of Pierce Bros. Ltd., New Bedford, Mass., died Dec. 24 in an automobile accident.

G. Herbert Windeler, aged 76. general agent for Textile Alliance, Inc., during the World War with headquarters at Boston, Mass., died recently.

George W. Roope, a former wool merchant at Boston, Mass., who retired from business several years ago, died at Miami, Fla., recently.

J. P. Linn, aged 63, president of Corriher Mills Co., Landis, N. C., died recently, at Salisbury, N. C.

Will B. Anderson, aged 56, general manager of the Barber Colman Co., Framingham, Mass., died at his home there recently.

E. C. Barnhardt, aged 73, of Concord, N. C., former general manager of the Cannon Mills, and later head of the Gibson Mfg. Co., of Concord, died recently.

Arthur C. Corey, aged 71, prominent construction engineer identified with the erection of many important textile mills in New England, died at Acushnet, Mass. recently.

Frank W. Potter, aged 75, chairman of the board of Hewes & Potter, Inc., Boston, Mass., died at Winchester, Mass., recently.

Alonzo W. Chase, aged 79, who served 30 years as overseer of the finishing department of the Elm Mills, Tilton, N. H., died suddenly Jan. 19.

George L. Snow, former partner in the knitting firm of Burns & Snow, Nashua, N. H., died Jan. 18 in a Boston hospital.

Philippe Joseph Lagasse, aged 65, former picking department overseer at the Amoskeag Mfg. Co., Manchester, N. H., died recently in that city.

George M. Meyer, aged 62, purchasing agent for the Charlotte (N.C.) plant of Grinnell Co., died recently at his home in Charlotte.

Troy B. Hall, aged 32, a foreman at Clinchfield Mfg. Co., Marion, N. C., was killed in an automobile accident recently.

Joseph A. Cooper, aged 58, for 30 years foreman of the tying-in department of the White Oak plant of the Cone Mills, Greensboro, N. C., died last month of pneumonia.

MILL NEWS

Cotton Mill News

U. S. Rubber Products, Inc., Hogansville, Ga., have awarded general contract to Batson-Cook Co., West Point, Ga., for one-story mill addition, to be used for warehouse.

Lanett (Ga.) **Mill of West Point Mfg. Co.,** is completing one-story addition, 100 x 100 ft., costing about $50,000.

Bibb Mfg. Co., Macon, Ga., has almost completed the construction of an addition, 50x200 ft., in which new machinery will be installed. The expansion program will cost about $100,000.

Aragon Mills, Rockmart, Ga., has completed an addition containing 25,000 ft. of floor space, and is installing 100 looms.

Western Shade Cloth Co., Chicago, Ill., has work under way on new one and two-story mill, 150 x 250 ft., at Sunrise and Clarence Sts., Los Angeles, Calif. It will cost close to $110,000.

Massasoit Mfg. Co., Fall River, Mass., has been chartered with capital of 1,000 shares, to take over and succeed company of same name.

United Merchants & Mfrs., Inc., report net profit for fiscal year ended July 31, 1937 of $1,575,808, compared with $1,494,337 for previous fiscal year.

Dwight Mfg. Co., reports net profit of $621,652 for year ended Nov. 30, 1937 compared with net of $605,439 for previous fiscal year.

Neo Fabrics, Inc., manufacturers of upholstery materials, have leased a new building at 1310-1307 Dauphine Street, New Orleans, La.

Gaston Mfg. Co., Cherryville, N. C., has been purchased by the **Dover Mill Co.** and **Ora Mill Co.,** both of Shelby, N. C. Work is going forward reconditioning the machinery and mill building after which yarn will be manufactured for the above named mills and the Esther Mill, also of Shelby. It will be known as **Dora Yarn Mill Co.**

Springs Cotton Mills, Fort Mill, S. C., are completing three-story addition to local No. 1 Mill, 100 x 150 ft., to be used for additional looms and cloth room equipment, estimated to cost over $100,000, with machinery.

D. E. Rhyne Mills, Inc., Lincolnton, N. C., has perfected its organization with James A. Abernethy, Jr., president; Bert Rhyne, vice-president, and W. W. Glenn, secretary-treasurer. The nine members of the board of directors each represents one of the direct heirs of the Rhyne estate.

Marshall (N.C.) **Mill & Power Co.,** recently organized, has begun operation of a new cotton mill in former plant of Capitola Mfg. Co. Extensions and improvements have been made in connection with a modernization program costing close to $75,000, including equipment. Craig L. Rudisill is president, A. W. Whitehurst, secretary, and E. R. Tweed, Sr., treasurer.

B. B. & R. Knight Corp., Providence, R. I., will be known as "Fruit of the Loom, Inc.," in accordance with reorganization plan approved by stockholders on Jan. 19.

Jackson Mills, Pascagoula, Miss., has awarded contract for an addition 281 x 120 ft. to cost $51,168. Eastern section of main building of the mills is completed.

Bowling Green (S.C.) **Spinning Co.** has completed construction of an addition in which 10 new cards are installed.

Graniteville (S.C.) **Mfg. Co.** is completing an addition for the purpose of better arranging its machinery.

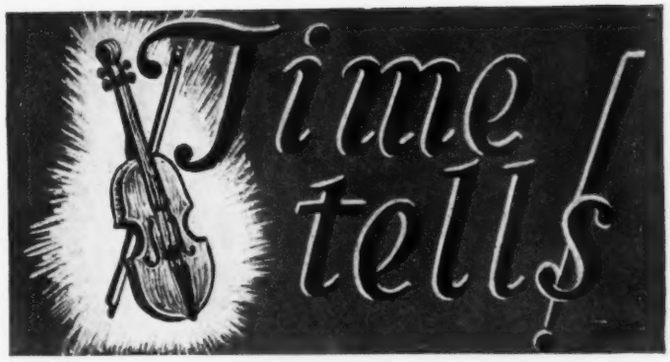
Southern Weaving Co., Greenville, S. C., has completed a new office building at cost of $10,000. The Gallivan Construction Co. did the work.

Greenwood (S.C.) **Cotton Mill** is completing an addition, 42 x 92 ft., three stories, to cost more than $45,000. J. C. Hempile of Columbia, S. C., prepared the plans.

Santee Mills, Orangeburg, S. C., are completing an expansion and improvement program under way for a number of months.

Aragon-Baldwin Cotton Mills, Inc., Whitmire, S. C., plant has begun work on a $20,000 addition, with Potter & Shackelford, Greenville, S. C., contractors.

Knoxville (Tenn.) **Cotton Mills, Inc.,** has been dismantled. The machinery has been sold to Jerry Walker, of the



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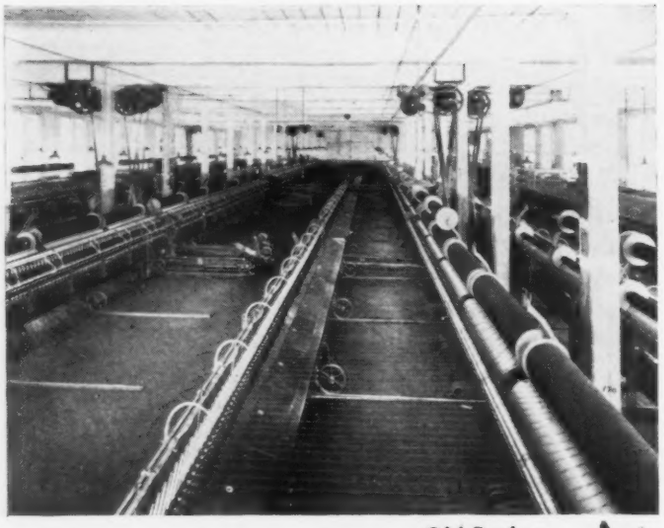
Giant Package



Old Package

Fourteen obsolete mules were replaced by eleven GIANT Package Mules in this mill. Since that time the mill has run only intermittently, but even under these difficult conditions the following gains have been effected:

Total ends on tape condensers increased from 84 to 96—a gain of nearly 15% in production

Number of mule operatives reduced from 29 to 23 without reducing production, which, on the basis of a 40 hr. week, represents a gain in production per man hour of 26 per cent. Actual saving in spinning labor cost, *after raising hourly* rate better than 10%—11-8/10%.

Number of operatives on warp winders reduced from 14 at 40 hrs. per week to 5 at 40 hrs. per week, which represents a saving of about 64%. Saving of about 10% on winding of filling also effected.

The mill reports that it expects to show even better results when it returns to a normal production basis.

All of these savings can be traced to the GIANT Package which reduces doffing time at the mule and at the winders.

Also consider the fact that the GIANT Package makes possible a better fabric because of less knots (up to 60%) and because the yarn is MULE SPUN and you have ample reason for promptly investigating its possibilities in YOUR mill.

JOHNSON & BASSETT, INC.

WORCESTER, MASS.

Canadian Representative: W. J. Westaway Co., Ltd., Hamilton, Ontario

MILL NEWS

Walker Engineering Co., and moved to Gastonia.

Dominion Textile Co., Ltd., Montreal, Que., is having plans drawn by T. Pringle & Sons, Coristine Bldg., Montreal, architects, for new mill unit estimated to cost over $100,000.

Wool Mill News

Broad Brook (Conn.) **Mfg. Co.,** General Motors subsidiary, contrary to rumors, will not be moved to an out-of-state location. The company has recently completed improvements costing $45,000.

Sanford (Me.) **Mills,** manufacturers of mohair plush and other fabrics, reports for the fiscal year ended Nov. 30 last net earnings equal to $6.10 a share in 234,980 shares of common. Earnings in the 1936 fiscal year were equal to $8.38 a share on the same number.

Talbot Mills, North Billerica, Mass., have work under way on improvements in mill and equipment: looms are being rearranged to provide better working facilities.

Whittall Mfg. Co., Worcester, Mass., has been chartered with capital of 5,000 shares of stock. It is understood that it will succeed to M. J. Whittall Associates, Ltd., now in receivership.

S. Stroock & Co., Newburgh, N. Y., reports net profit for 1937 of $179,248 compared with $217,859 for 1936.

Beacon Mfg. Co., Swannanoa, N. C., plans rebuilding of portion of mill, recently damaged with loss reported close to $40,000.

Collins & Aikman Corp., Philadelphia, reports profit for nine months ended Nov. 27, 1937 of $2,884,263, compared with $3,940,599 for similar period in 1936.

Western Woolen Mills Co., Edmonton, Alberta, will build a woolen mill to be ready for the spring clip.

Rayon & Silk Mill News

Gordonsville, Ga.—S. M. Nottingham and John Graves are at head of a project to establish a local rayon fabric mill. A company is being organized and fund of $30,000 will be raised to construct a one-story building. New unit will be 130 x 130 ft., and will provide facilities for employment of about 150.

Filter Media Corp., Irvington-on-Hudson, N. Y., is handling Fiberglas woven filter fabrics made in collaboration with Owens-Illinois Glass Co.

Duplan Silk Corp., New York, N. Y., is completing erection of its new mill at Grottoes, Va., consisting of a main one-story unit, 237 x 431 ft., and expects to have plant ready for service early in the spring. Entire project will represent an investment of about $500,000. The corporation reports net profit of $215,934 for six months ended Nov. 30, 1937 compared with $323,119 for similar period in 1936.

Oswego (N.Y.) **Silk Corp.,** subsidiary of the Capitol Silk Co. of New York City, is now occupying both Mill No. 1 and No. 2 of the former Oswego Yarn Mills, Inc., plant.

Burlington Mills Inc., Greensboro, N. C., has completed construction of a mill building at Bristol, Tenn.-Va., at a cost of $200,000, in which machinery is being installed at a cost of $300,000.

Georgetown Silk Co., Durham, N. C., plans expansion and improvements in local plant, including new addition.

American Enka Corp., Enka, N. C., has awarded general contract to Potter & Shackelford, Inc., Greenville, S. C., for one-story addition to be used for expansion in chemical division, to cost over $60,000.

Red Springs (N.C.) **Weaving Co.,** recently organized, plans early operation of a new local rayon and silk mill. New company is headed by C. W. Tillett and H. B. Campbell.

Industrial Rayon Corp., Cleveland, O., reports a net profit of $262,210 for 1937, against $1,361,460 for the preceding year.

Sterling Silk Co., Mifflinsburg, Pa., recently organized, has work under way on installation of equipment in a local building, formerly occupied by the Mifflinsburg Body Co.

H. Warshow & Son Silk Co., Montoursville, Pa., has acquired the former plant of Aronsohn Silk Mill, Jordan, St., which will be operated as a branch of the firm's main plant in Broad St.

Freeman Silk Co. Pennsburg, Pa., plans rebuilding of

MILL NEWS

portion of local mill, recently damaged by fire with loss estimated at about $5,000.

Kingsboro Silk Mills Inc., Daisy, Tenn., began the installation of new dyeing and finishing machinery last month. The mill previously did weaving only.

Malven & Son, Clifton Forge, Va., narrow fabric manufacturers, have put into operation 55 additional looms, installed in a new addition.

Harvey C. Robinson Co., Ltd., have moved their yarn-winding plant from Peterboro, Ont., to 570 Queen street east, Toronto, Ont.

Knitting Mill News

Demopolis, Ala.: A company to manufacture men's rayon hose has been organized here, according to Capt. T. C. Reid, secretary of Chamber of Commerce. A. E. Harger, of Meridian, Miss., will be superintendent.

Vanity Fair Silk Mills, Monroeville, Ala., have awarded general contract to Agee & Kimbrough, Pine Hill, Ala., for one-story addition to mill, to cost over $25,000, with equipment.

Rodgers Hosiery Co., Athens, Ga., has installed 11 hosiery machines.

Maywood Silk Hosiery Mills, Inc., Cordele, Ga., has installed five additional new knitting machines to augment the five already in operation.

Douglas (Ga.) **Silk Products Co.** has constructed an addition in which 15 additional hosiery machines and auxiliary equipment will be installed.

Griffin (Ga.) **Knitting Mills** have been sold by J. A. Evans to H. M. Collier of the Montezuma (Ga.) Knitting Mills.

Burson Knitting Co., Rockford, Ill., has approved plans for alterations and improvements in portion of mill on South Main St., and will proceed with work at once.

Ware Valley Mfg. Co., Inc., Ware, Mass., has closed its local mills permanently and property of company will be liquidated. Property recently was acquired by E-Z Mills, Inc., Bennington, Vt., Chattanooga, Tenn., and Cartersville, Ga., and operations will be consolidated at these plants.

Corinth (Miss.) **Hosiery Mills, Inc.,** has completed movement of 28 full-fashioned machines from its Anniston, Ala., plant which gives the Corinth mill a total of 75 such machines.

Bossong Hosiery Mills, Asheboro, N. C., are pushing an expansion and improvement program at plant involving about $100,000, and including a one-story addition.

Cranford Hosiery Mill, Asheboro, N. C., has completed installation of 14 Reading full-fashioned machines, which enables the company to manufacture full-fashioned as well as seamless hosiery.

May Hosiery Mills, Inc., Burlington, N. C., is completing an addition to the finishing department, measuring 24 x 100 ft.

Concord (N.C.) **Knitting Co.** has plans for one-story addition to mill to cost close to $25,000, with equipment.

Hugh Grey Hosiery Co., Concord, N. C., recently organized, is pushing work on new one-story mill, 75 x 120 ft., for which general erection is being carried out by C. M. Guest & Sons, Greensboro, N. C. Completion is set for March, with estimated cost about $50,000.

Henderson Hosiery Mill, Hickory, N. C., has been established to manufacture and convert hosiery.

Adams-Millis Corp., High Point, N. C., has awarded general contract to Frank L. Blum Co., Winston-Salem, N. C., for one-story addition. Cost over $25,000, with equipment.

Diamond Full-Fashioned Hosiery Co., High Point, N. C., has completed installation of 12 machines purchased from Vogue Silk Hosiery Co. of Philadelphia, Pa., following liquidation of the latter company.

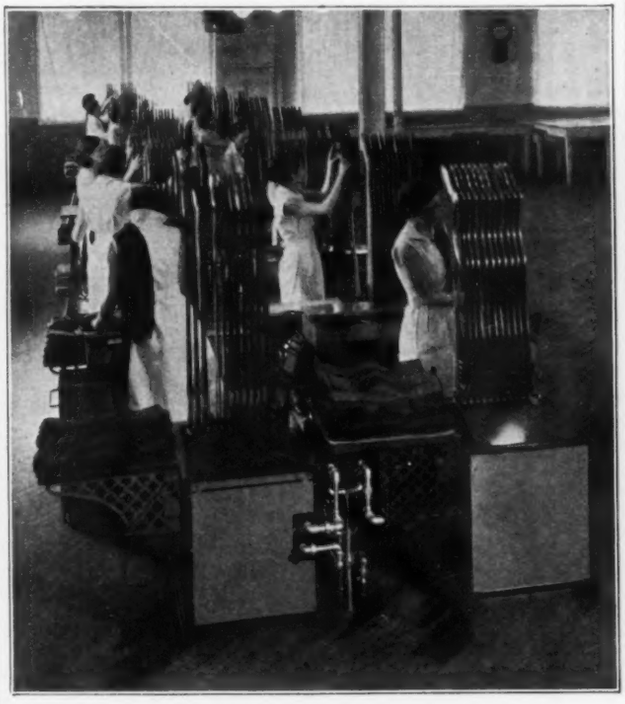
Blue Ridge Hosiery Mills, Marion, N. C., plan one-story addition for increase in capacity. Cost estimated close to $50,000, with equipment.

Morganton (N.C.) **Full-Fashioned Hosiery Co.**— Officials of this company, headed by Robert O. Huffman, treasurer, are organizing a new company to operate a local mill. Proposed plant will represent an investment of about $200,000, and will give

PARAMOUNT DUAL HEAT

1000 DOZENS DAILY

HOSIERY FINISHING



A PRODUCTION in excess of 1,000 dozens full fashioned ladies' hosiery is being finished daily on the 13 PARAMOUNT DUAL HEAT MACHINES operated in this mill during one eight-hour shift—and the character and quality of the work is incomparable since the PATENTED DUAL HEAT principle of drying is positive protection against "baking" delicate silk fabrics. Not only does the PARAMOUNT DUAL HEAT MACHINE contribute outstanding features of production and quality, but it represents—

1. Less investment per dozen
2. A minimum of floor space occupancy
3. Less power and steam consumption per dozen
4. Ideal room and working conditions
5. Less maintenance
6. Ease and comfort to the operator
7. Simplicity and durability of construction

Any one feature alone, of the numerous advantages which the PARAMOUNT DUAL HEAT MACHINE offers, will justify a change to this superior method of hosiery finishing.

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80 Federal Street, Boston

MILL NEWS

employment to about 125 operatives.

Newton (N.C.) **Knitting Mills** announce that operations have been started with 30 knitting machines, eight ribbers and seven loopers. Horace J. Isenhour is owner and manager of the new mill.

L. & B. Hosiery Mill, Claremont, N. C., recently organized, has begun operations, with initial equipment of 48 knitting machines.

Brownhill & Kramer, Inc., Philadelphia, Pa., are discontinuing operations at local mill, and real estate, stock and equipment will be offered at a public auction sale on Feb. 16. It is understood that company will continue production at branch mill at Coudersport, Pa.

Philadelphia (Pa.) **Knitting Mills** was offering its equipment at auction Jan. 17 when the sale was stopped by the clamor of former employees and sympathizers who were protesting against removal of the equipment.

Norris Hosiery Mills, Cleveland, Tenn., began operations late last month with 10 machines and auxiliary equipment. O. N. Norris of Chattanooga, Tenn., is operator.

Dayton, Tenn.: The new full-fashioned hosiery mill, operated by Walter Schroeder of Niota, Tenn., and financed partially by northern capital, has begun the construction of a mill building.

Mountain Hosiery Corp., Englewood, Tenn., has begun operations at new local mill, giving employment to about 80. The plant was removed recently from Narrows, Va.

Rex Knitting Mills have been established at LaFollette, Tenn., being organized late in 1937.

Smoky Mountain Hosiery Mills, Kingsport, Tenn., is a newly established mill, being organized late in 1937.

Vanette Hosiery Mills, Dallas, Tex., are completing one-story addition to mill and will install new knitting machines and auxiliary equipment to increase capacity about 25%. Work is estimated to cost close to $45,000.

Baker - Moise Hosiery Mills, Dallas, Tex., has built an addition in which 10 full-fashioned hosiery machines will be installed.

Berryville (Va.) **Mills, Inc.,** recently organized, have arranged for lease of local silk mill of Berryville Silk Mills, idle for some time and held by the Victoria Textile Mills, Inc.

Crewe, Va.—The necessary $25,000 to erect a building for a hosiery knitting mill here has been raised, it was announced by A. B. Cummins, of the committee in charge of collections. The operating company is from Pennsylvania.

Marshall Field & Co., Fieldale, Va., have completed erection of a new one-story building at local mill and will use for hosiery division, concentrating all such production at local unit in the future, including dyeing and finishing.

Gordonsville, Va., has floated a bond issue for $30,000 with which to construct a building to house a hosiery mill. Site has been selected and the new industry is scheduled to be in operation by May 1, employing 200.

Richmond Hosiery Ltd., London, Ont., has acquired the knitting mill of A. Burritt & Co. plant, Mitchell, Ont.

Processing Plant News

Elko Co., Elk Mills, Md., has been organized to operate a local dye and finishing mill. New company is headed by Robert C. Stephenson, Newton Square, Pa., and John C. Stephenson, Torresdale, Pa.

Bailey Dye Works, Inc., Philadelphia, Pa., has purchased former yarn-winding plant of A. G. Spalding & Bros., New York, N. Y., at Elkton, Md., and will improve and equip for new mill.

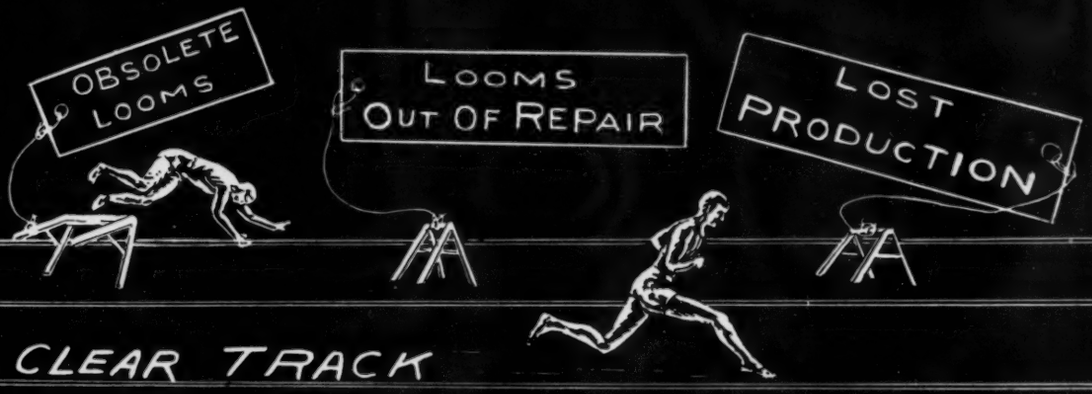
Imperial Printing & Finishing Co's former $2,000,000 plant at Cranston, R. I., was put up at auction Jan. 19 and 20 when machinery and equiment were sold. No bids were received for the real estate, but three concerns are reported negotiating for it.

Central Franklin Process Co., Chattanooga, Tenn., has awarded general contract to Mark K. Wilson Co., Chattanooga, for two-story addition, 69 x 115 ft., for warehouse, estimated to cost $35,000. Superstructure will be placed under way at once.

Fontaine (Va.) **Converting Works, Inc.,** recently completed construction of a number of new dwellings for the operatives.

On Your Marks!
Ready!
Go!

You Can't Win the Race for Textile Mill Profits Unless Your Mill is Ready to Start with the Pistol Shot of Good Times



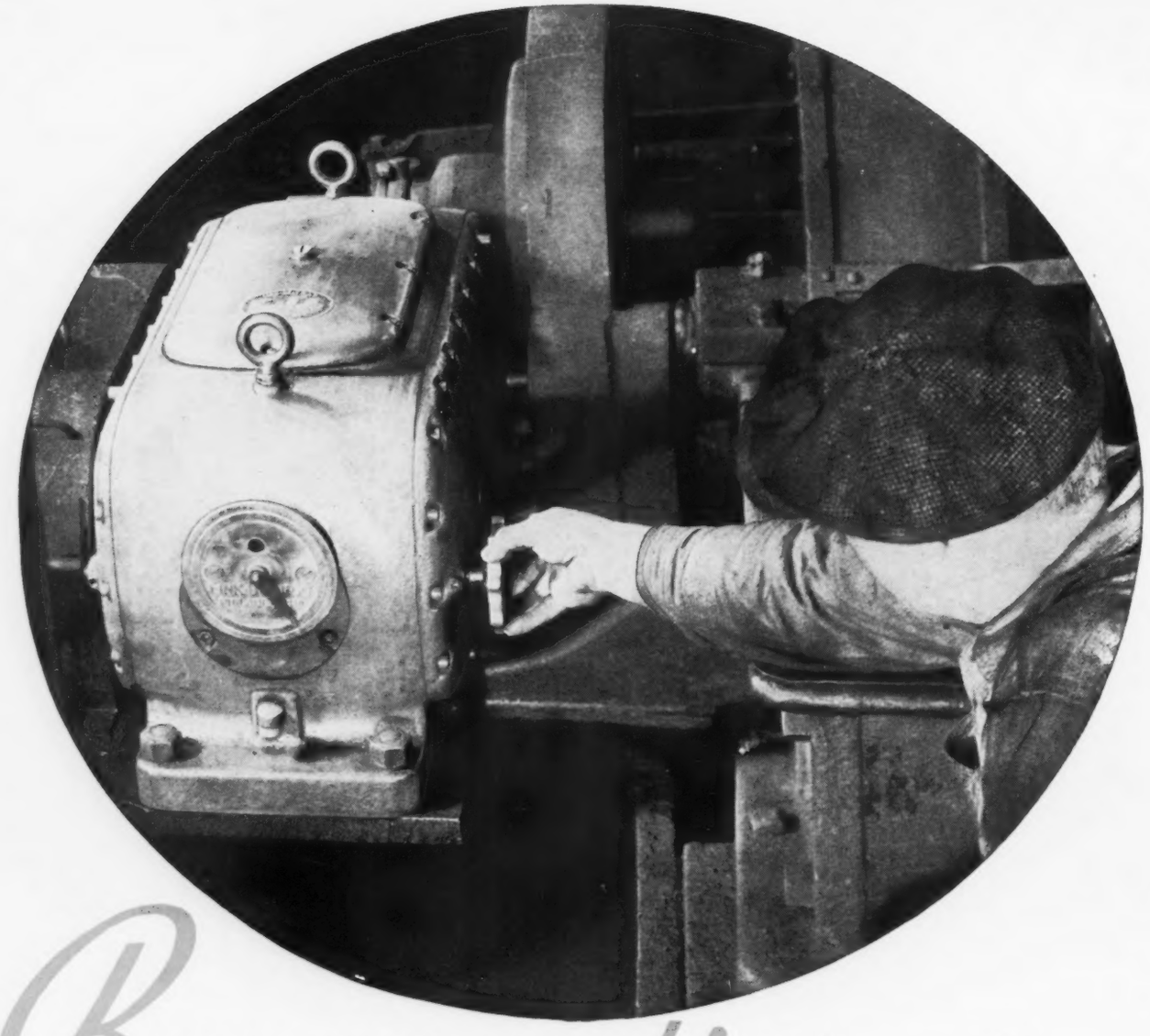
? When Good Times Return — Will Your Mill Have a Clear Track Ahead or an Obstacle Race on a Track Filled with Hurdles You Might Clear up at This Time? ?

Don't Wait for Good Times and Lose the Advantage of a Good Start

Get Ready Now

DRAPER CORPORATION

Atlanta Georgia Hopedale Massachusetts Spartanburg S C



Run your machines at their most productive Speeds

● How many machines in your mill really need positive variable speed transmission — to maintain their top production — to assure that uniform quality of product for which you are striving?

The P. I. V. Gear provides positive tooth-to-tooth transmission, instantly providing any speed within pre-determined limits — adjusted with exactness to the fraction of an R.P.M. It is an all metal, unusually compact unit, available for horizontal and vertical mounting of the basic unit; also motorized and with gear reduction sets. Can be arranged for manual or automatic operation.

Send for Book No. 1574. Also send for catalogs covering Link-Belt silent and roller chain drives, speed reducers, and a complete line of transmission units such as anti-friction and babbitted bearing pillow blocks, clutches, couplings, take-ups, pulleys, gears, etc.

LINK-BELT P.I.V. GEAR

Link-Belt Company, Philadelphia, Indianapolis, Chicago, Atlanta, San Francisco, Toronto, or any of our offices, located in principal cities. 7270

POSITIVE INFINITELY-VARIABLE SPEED TRANSMISSION

NO SUBSTITUTES

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Jacques Wolf's long experience in sulphonating oils led to this new process of sulphonation particularly adaptable to olive oil.

Sulphonated Olive Oil W-700 gives excellent results as a softener and penetrator for acetates and other synthetic fibres. It is completely soluble, high in SO_3 content, will not turn rancid and imparts a soft satiny finish to silks, rayons and acetates. It is miscible with organic acids and weighter finishes and with pigments for delustre finishes.

Sulphonated Olive Oil S-370 DP is a specially prepared product which is miscible with mineral oils for finishing.

In operations where the pure olive oil content of Sulphonated Olive Oil W-700 is not essential we can supply sulphonated teaseed in combination with the pure olive oil product.

Write today for working samples for your own testing.

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ALBONE*—du Pont 100-vol. Electrolytic Hydrogen Peroxide

DFF† SOLOZONE*—du Pont Sodium Peroxide, dustless and free-flowing

SODIUM PERBORATE

*REG. U. S. PAT. OFF.
†TRADE MARK

FOR that's what leading textile manufacturers throughout the country are using for the production of *Better Bleached* goods. All kinds of fibers and fabrics, plain or mixed, can be given a safe *quality* bleach with Peroxide.

These three du Pont Peroxides cover the range of textile bleaching requirements—DFF SOLOZONE, dustless, free-flowing Sodium Peroxide; ALBONE, 100-vol. electrolytic Hydrogen Peroxide; and Sodium Perborate. One or all of these are economically practicable for your particular bleaching requirements and mill conditions.

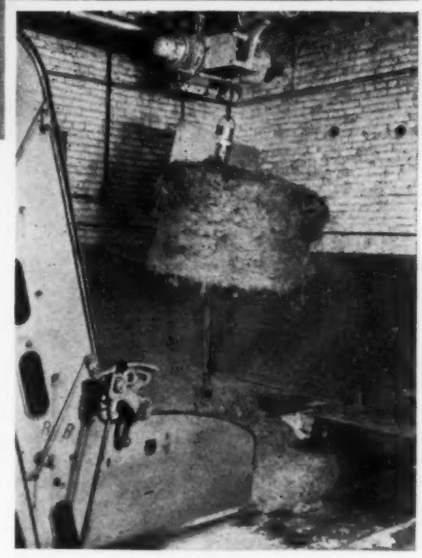
TECHNICAL SERVICE—The experience of over 30 years in use of du Pont Peroxides in bleaching is available to you. Bleaching experts with sound, practical experience are maintained in textile districts to give prompt service. For technical cooperation, just call or write our nearest District Office.

DU PONT

The R. & H. Chemicals Department
E. I. DU PONT DE NEMOURS & COMPANY, INC.
Wilmington, Delaware

District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco

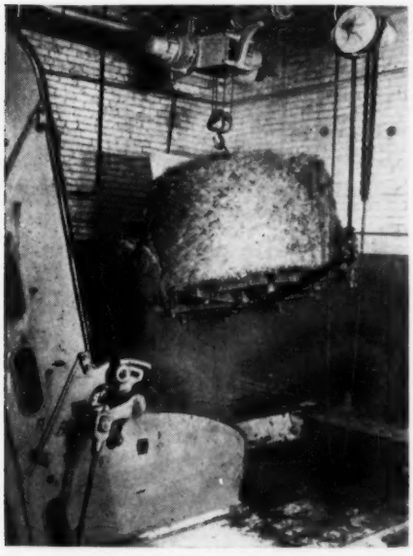
A PROVEN SUCCESS FOR DYEING CUT RAYON FIBRES



THE Franklin Process Raw Stock Dyeing Machine illustrated herewith is one of our stainless metal models which was designed for the dyeing of cut rayon fibre and which has been very successful on this type of work.

This machine dyes in a closed kier, circulating the dye liquor through the stock (not the stock through the liquor) under hydraulic pressure. Not only does it effect complete and uniform penetration and leave the stock in exceptionally good condition, but also makes important savings in labor and steam.

After dyeing the stock is hoisted out in cheese form on a



false bottom and transferred by trolley to the next processing machine. Unloading is further facilitated by the fact that a fin on the false bottom divides the load in half so that the first half can be readily dumped off with the aid of a special lifting bar provided for the purpose and the second half slides off of its own weight (see illustrations).

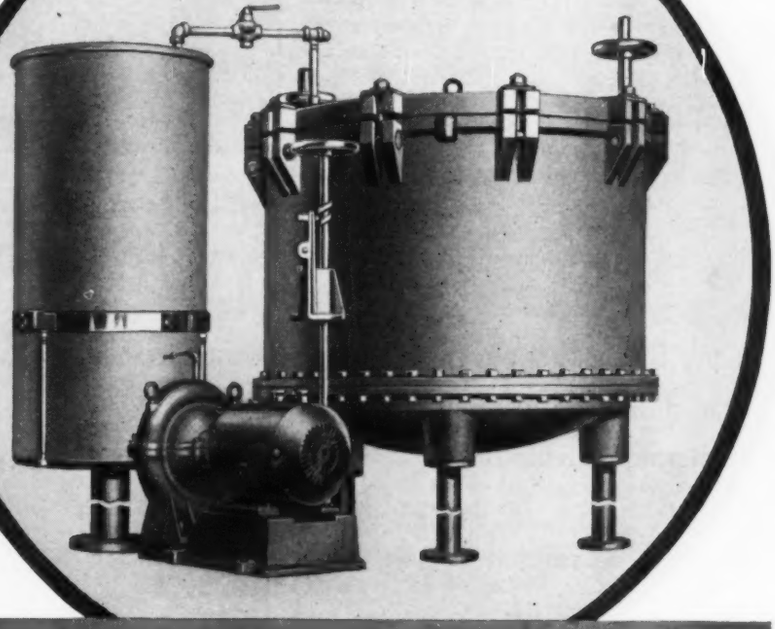
The many leading mills that now use this machine (names on request) have found that it pays for itself in two years or less time.

Further details on request.

FRANKLIN PROCESS COMPANY,
Dyeing and Processing Machines
— and Cotton Yarn Dyers —
Main office and Machine Shop,
Providence, R. I.

NOTE: We also make machines for dyeing rayon tops which have proved very successful.

One of our stainless metal models



FRANKLIN PROCESS RAW STOCK DYEING MACHINE

A few of the most progressive mills now using Saco-Lowell Controlled Draft Roving.

TEN years ago Controlled Draft Roving was an idea. Today it is an achievement which has so revolutionized conventional methods of roving that its adoption must certainly interest every mill now using multi-roving processes. Furthermore, its acceptance by the most progressive mills in the industry is a definite indication and additional proof that this new technique is here to stay.

But what are the facts? Simply these: Controlled Draft Roving eliminates excessive doubling — yet improves quality. There is a more regular distribution of the fibres — fewer irregularities — greater strength — consistent uniformity. And mills spinning a number of counts can do so with two or three rovings.

Interpreted in terms of investment —Controlled Draft Roving means lower operating costs, greater efficiency, and more profits. You want *facts, proof, evidence* — not words or claims . . . Saco-Lowell engineers would like to go over the details with you.

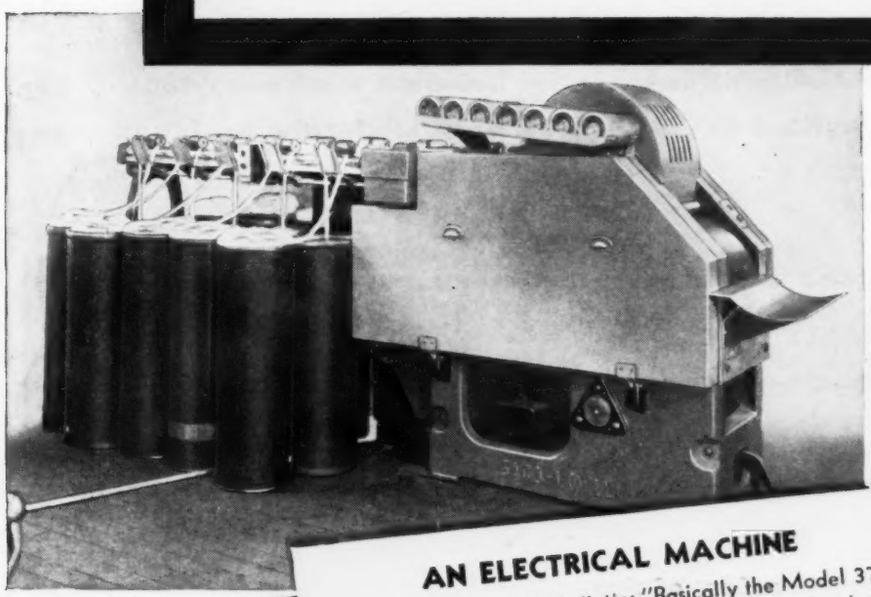
SACO-LOWELL SHOPS

60 BATTERYMARCH STREET, BOSTON, MASS.

CHARLOTTE, NORTH CAROLINA GREENVILLE, SOUTH CAROLINA ATLANTA, GEORGIA

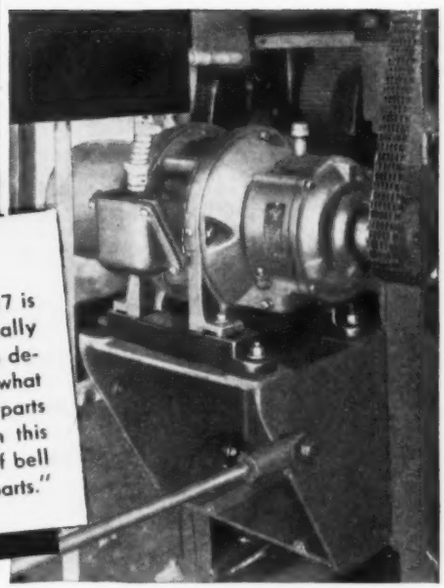
Saco-Lowell

Incorporates Complete Electrical System in High-speed, Precision Lap Winder



LEFT — With all moving parts enclosed, and with the electric drive and control built in, this Saco-Lowell Model 37 lap winder sets new standards of fast and uniform production

BELOW — G-E gear-motor with disk brake — a positive and smooth drive for the Model 37 and for many other textile machines



AN ELECTRICAL MACHINE

From the *Saco-Lowell Bulletin:* "Basically the Model 37 is self-contained, electrically controlled, and an electrically driven machine in which the mechanical parts have been designed and built around the electrical parts in contrast to what has generally been the practice of tacking the electrical parts on to a mechanical design. Designing the machine in this manner enabled us to eliminate the motley collection of bell cranks, sleeves, springs, pawls, catches, and other small parts."

SACO-LOWELL'S Model 37 is an outstanding development in a high-speed, precision lap winder. This lap winder, according to the manufacturer, while making laps of greater uniformity, produces 33 1/3 per cent more than any previous machine of this type.

In perfecting the Model 37, Saco-Lowell engineers drew upon the application experience of General Electric.

This combination has resulted in:

1. Increased productive capacity.
2. Yard-for-yard weights of unusual uniformity.
3. Simpler operation, with safety at a new high standard.
4. Elimination of numerous bothersome parts.

The Model 37 has a built-in drive and control system. Thus the electrical installation requires only the connection of power leads to put the machine into operation. Use of a disk-type brake on the motor makes possible positive braking without jarring the machine. Electric stop-motion control automatically and instantly stops the machine whenever an end breaks.

Whether you are building or installing machines, it will pay you to consult General Electric as to the correct electrical application. Inquire of the nearest G-E office, or write General Electric, Schenectady, N. Y.

GENERAL ELECTRIC

Filing No. 8623 011-319

If you are tempted...

DON'T!

AT recent sales of *used* textile finishing machinery in New England, prices equalling *60 to 70%* of new modernly designed machines were paid.

Does This Pay?

Second-hand machinery has worn parts and replacements are always EXPENSIVE.

Second-hand equipment is always uncertain. Motor re-winding, for instance, is EXPENSIVE.

Taking down, removal and re-erection of second-hand machinery is *EXPENSIVE.*

Above are but a few of the expensive dangers of buying second-hand machinery. And then what have you—equipment which obviously must be behind the times, for we are constantly engaged in re-designing our standard line of finishing machinery—anti-friction bearings, lighter yet stronger metals, and higher speeds are features of these new machines which finish goods better and at lower prices.

It is because of the problems which have been put up to us by concerns that *ONCE* thought it economical to buy second-hand machinery that we say

If You Are Tempted—DON'T

DID you receive our new catalog? If you did not, let us know. Your copy is ready for mailing.

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

Established 1820

PLANTS at PHILADELPHIA and BETHAYRES, PA.

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A COMPLETE LINE OF FINISHING AND RAYON MACHINERY FOR THE TEXTILE INDUSTRY

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Inquiries as to our services solicited

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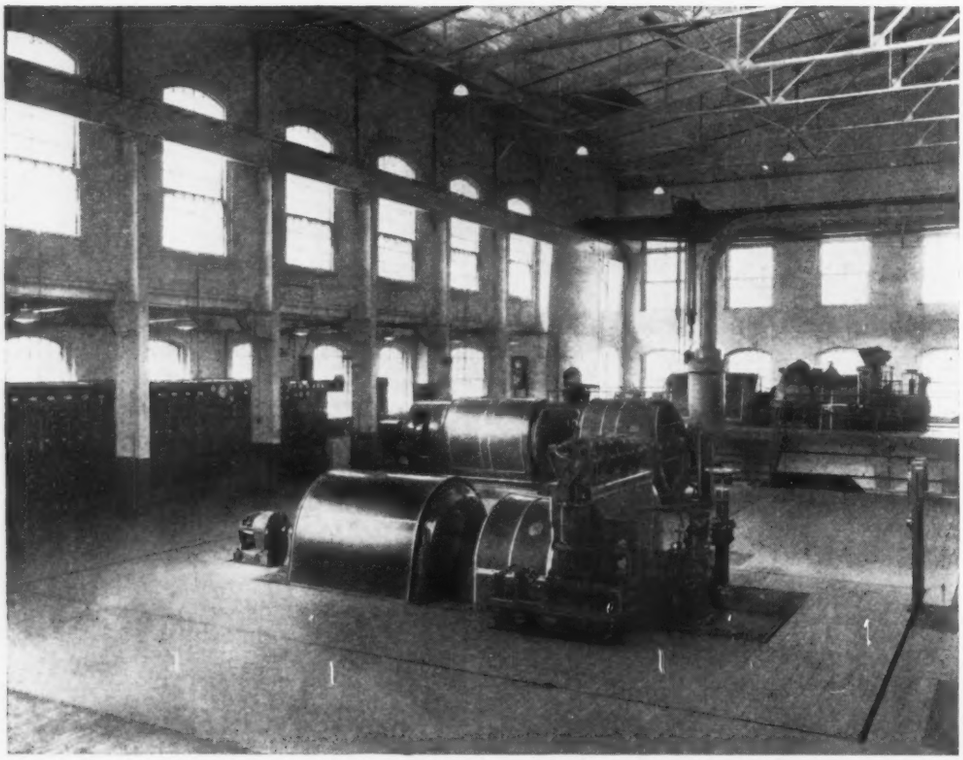
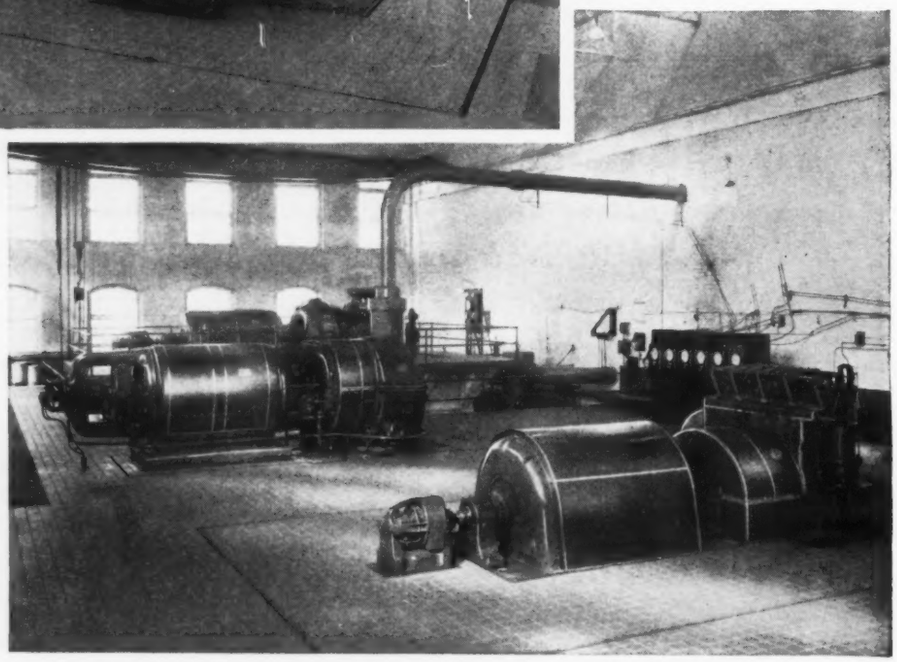
PROXIMITY'S ARE DOING



Proximity Manufacturing Company's White Oak Power House is equipped with: one 3,500 KW G.E. Turbine, one 3,000 KW G.E. Turbine, one 2,500 KW G.E. Turbine.



TEXACO
REG. T. M.

TEXACO

TURBINES All Right!

THE Proximity's White Oak Power House, Greensboro, N. C., supplies its other plants . . . White Oak Cotton Mills, Revolution Mills, and Proximity Print Works. The continuous operation of this power house is vital to the well-being of some 5,500 persons in this area.

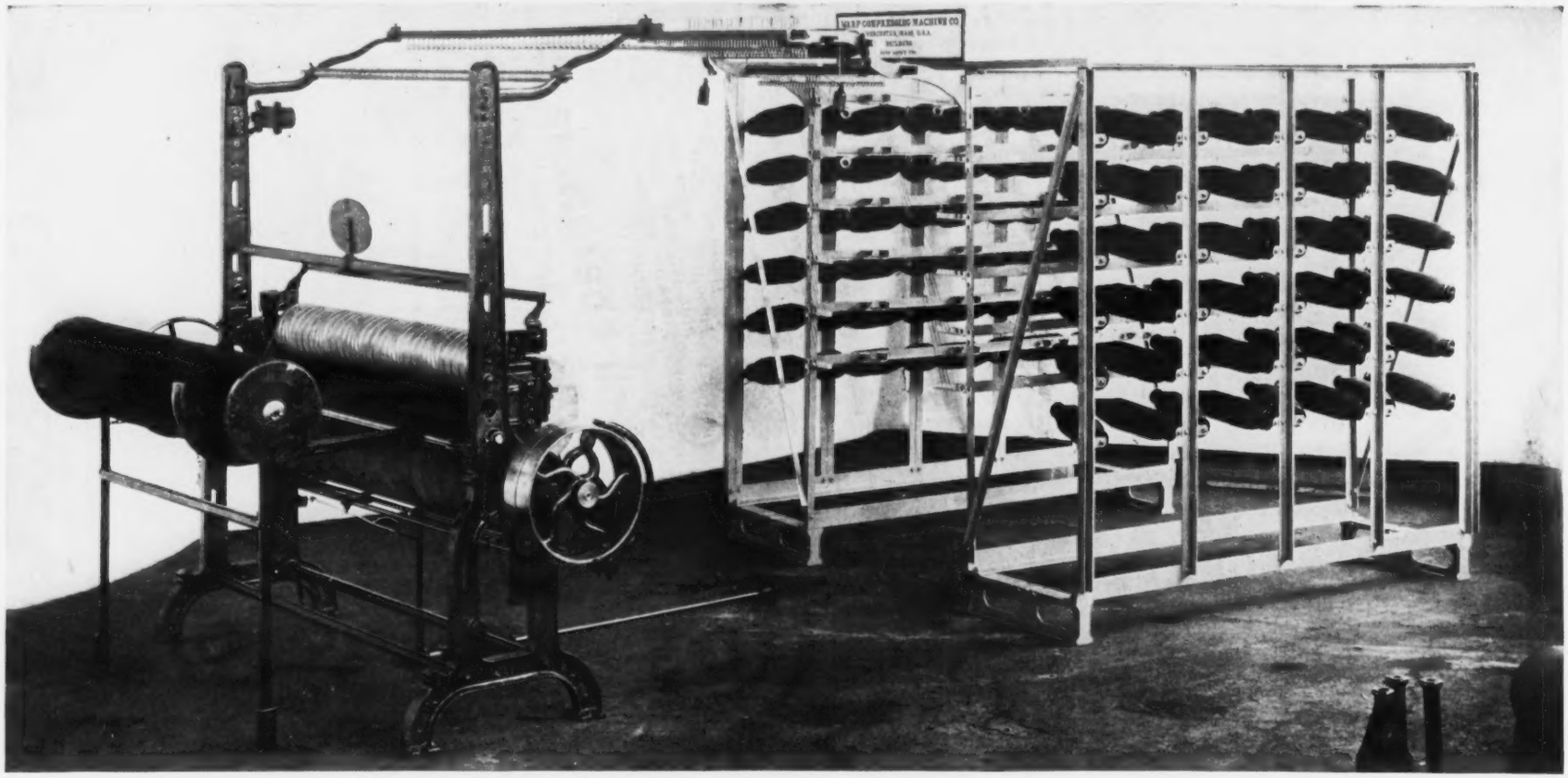
For 10 years the General Electric Turbines in this plant have been lubricated by Texaco Regal Oil.

If you could talk with management or operating personnel here at Greensboro, you'd hear only good reports about Texaco Regal Oil. After 10 years of hard use, these men *know* that Regal separates quickly and thoroughly from water, air, and other foreign substances, resists foaming, oxidation, emulsification, sludging.

Trained lubrication engineers are always available for consultation on the selection and application of Texaco Regal Oil. Prompt deliveries assured through 2108 warehouse plants throughout the United States. The Texas Company, 135 East 42nd Street, New York City.

• **THIS DIVISION OF THE CONE EXPORT & COMMISSION COMPANY** mills is one of the largest units of its kind in the entire South. The White Oak Power Plant runs White Oak Cotton Mills, operating 3,000 looms on denims, the Proximity Mills with 2,000 looms on denims, the Revolution Cotton Mills with 2,000 looms on high-grade flannels, and the Proximity Print Works with nine printing machines and other finishing equipment.

Regal OILS



HIGH SPEED JACK SPOOLING for woolen yarns

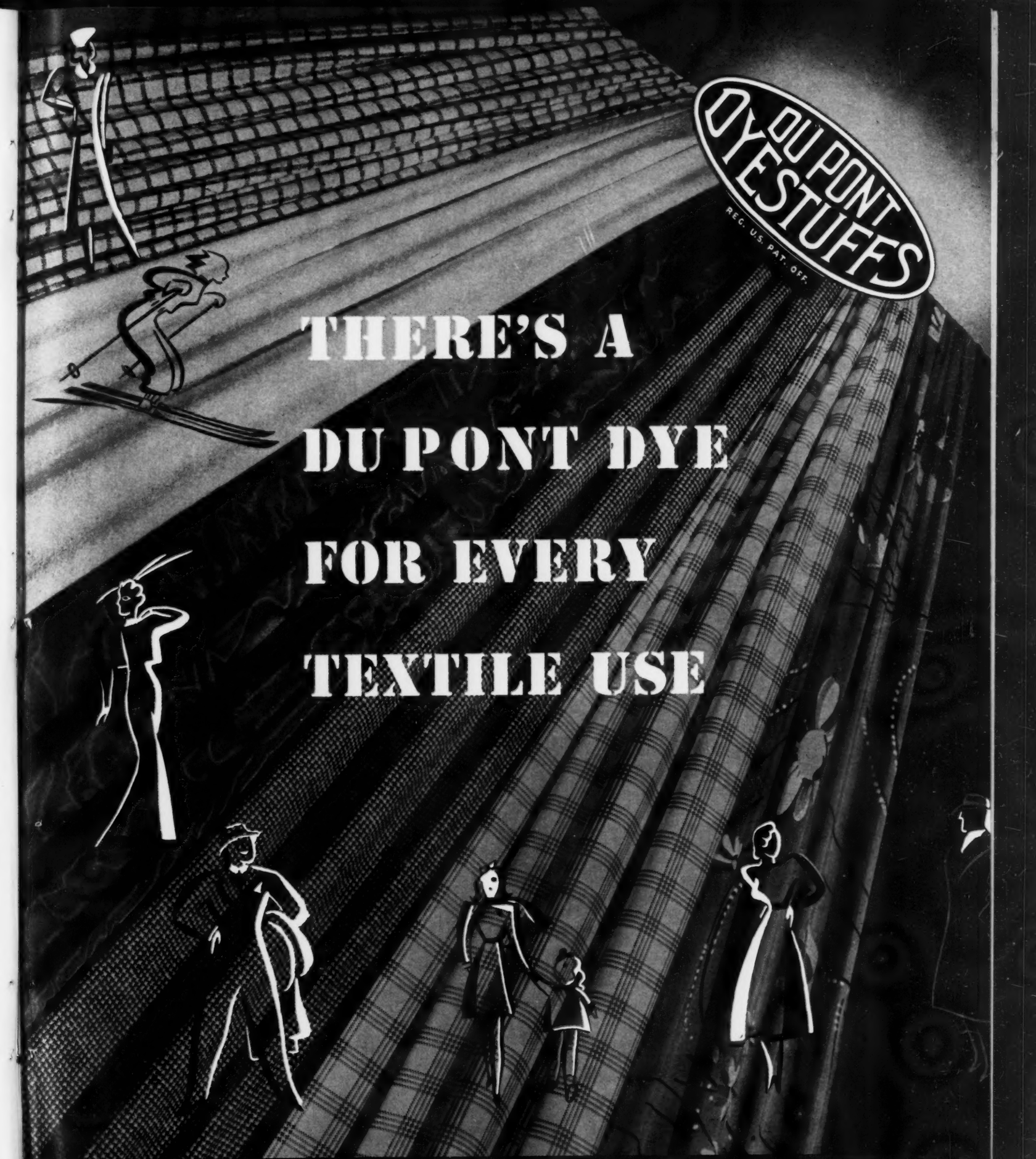
Using Large Bobbins

- **HI-SPEED COMPRESSING SPOOLER** Model M-S. With V-grooved steel compressing roll.
- Quick, cross-win traverse.
- Predetermined yardage counter.
- Stop on SPOOLER controlled by electric latch, wired to operate from drop-wires in CREEL.
- Operators working space is between SPOOLER & CREEL.
- DOFFING RACK arranged to permit operator to roll the full spool back between the frames, eliminating any lifting by the girl. RACK will hold two loaded spools before it interferes with operator.

MAGAZINE JACK SPOOLER CREEL

- For large bobbins.
- Single or Double bank.
- Electrical Stop-motion with porcelain drop wires.
- Tension, double-cup model.
- Spindles, revolving type so operator can spin the bobbin until "tail" is located.
- No interference between the two bobbins when tying over.
- Lower row of bobbins at good working distance from floor.
- Pig tail guides on top stick have porcelain seats.
- Working height in doffing about 60" at Tension side it is about 64".

WARP COMPRESSING MACHINE CO. • Builders • Worcester, Mass.

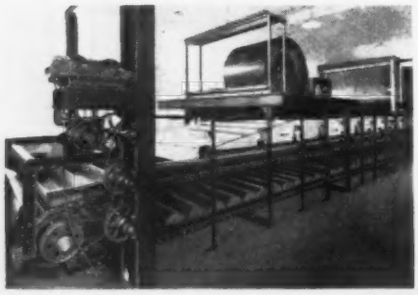


E. I. DU PONT DE NEMOURS & COMPANY, INCORPORATED

Organic Chemicals Department · Dyestuffs Division · Wilmington, Del.

QUALITY AND ECONOMY CONSPIRE TO EFFECT A&G FAST DRYING

THIS NEW PRINCIPLE DRIES STOCK IN 2 OR 3 MINUTES



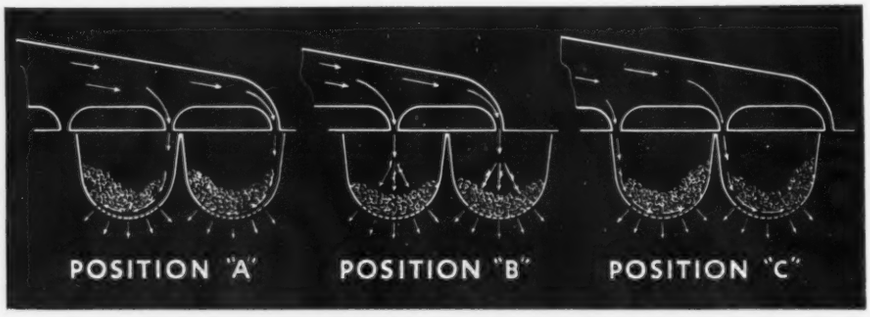
Installation in process of erection

In no piece of modernized A & G equipment have quality-producing and economy-producing features been combined to better advantage than in the A & G Stock Dryer.

This new machine, practically revolutionary in design, dries in 2 or 3 minutes stock that formerly required 10 or 15 minutes of drying.

This is accomplished by means of an extra large volume of heated air efficiently applied for a comparatively short time. Both the method of carrying the stock on a bucket conveyor and the method of applying the air through Dryjector nozzles are entirely new. These and other design features result in the following advantages:

1. Uniformly dried stock with qualities that will give to the finished fabric, longer wear, better handle and enhanced value.
2. A greatly increased production per square foot of apron.
3. A smaller percentage of stock lost in the dryer.
4. Machine easily cleaned.
5. No mixing of color.
6. Flexibility. Will handle anything from rags to the finest grades of wool.



Cross section of DRYJECTOR nozzles and bucket conveyor, showing how rapid and UNIFORM DRYING is accomplished.

WRITE FOR OUR NEW BULLETIN NO. 301

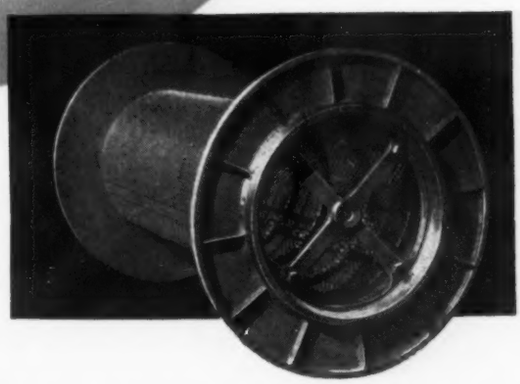
and learn about the many other new developments in design that this machine offers, including Stocktite joints between conveyor and air ducts, variable speed conveyor drive, automatic screen indicator, self-supporting panel housing, etc.

OTHER A & G PRODUCTS

Vapor Dryers • Open Tenter Dryers • Super Tenter Dryers • Cloth Brushers • Truck Dryers • Package Dryers • Patch Dryers • Warp Dryers • Conditioning Machines

ANDREWS & GOODRICH, INC., 336 ADAMS ST., BOSTON (DORCHESTER) MASS.

Designed for ECONOMY... Built for LONG LIFE



Monel dye beam manufactured by the R. D. Cole Mfg. Co., Newnan, Ga. Dimensions are 18 ins. O. D. by 54½ ins. long. Special 30-70 Nickel copper alloy, supplied by Kingsport F'dry & Mfg. Co., Kingsport, Tenn. is used for the cast heads, and for the supporting rings, which are welded to Monel tie-rods. Barrel and nuts are also Monel.

Corrosion-resistant metals and the rugged construction of this new dye beam assure many years of trouble-free service

● Obviously, economical to operate, is this new Monel* dye beam. That you can see by the amount of open area. Equally important, trouble-free performance is assured by the use of corrosion-resistant materials throughout. And long service is assured by the especially rugged construction.

Built in accordance with many users' recommendations, this new Monel dye beam follows special design in every detail. **BARREL:** Made of special temper, high strength Monel sheet with Brinell hardness (3000 Kg. load) of 165, average tensile strength 85,000 psi. Perforated with 7/16" dia. holes on ⅝" centers staggered. The special temper, high strength Monel sheet provides ample strength for carrying heavy loads at high speeds during beaming. **HEADS:** Cast in 30-70 Nickel-copper alloy, tensile strength 50,000 psi or more. Strongly reinforced with stiffening ribs to guard against bending or breaking, and insure true running. Immune to rusting; durable and corrosion-resistant. **REINFORCING STAYS:** Same 30-70 alloy as heads. Securely welded to ⅝" dia. Monel tie-rods. Vee contact permits unobstructed flow of dye liquor.

Old style Monel dye beams gave years of superior service. One user (name on request) has 65 of them, some in service over 12 years—and now has ordered 35 more. The new Monel dye beam is capable of even better performance. Incorporating in its design practical suggestions from many users, it assures years of trouble-free, economical service.

For names of manufacturers, mail the coupon—today.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York, N. Y.

MONEL INCO MONEL

*Monel is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. This alloy is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N. Y.

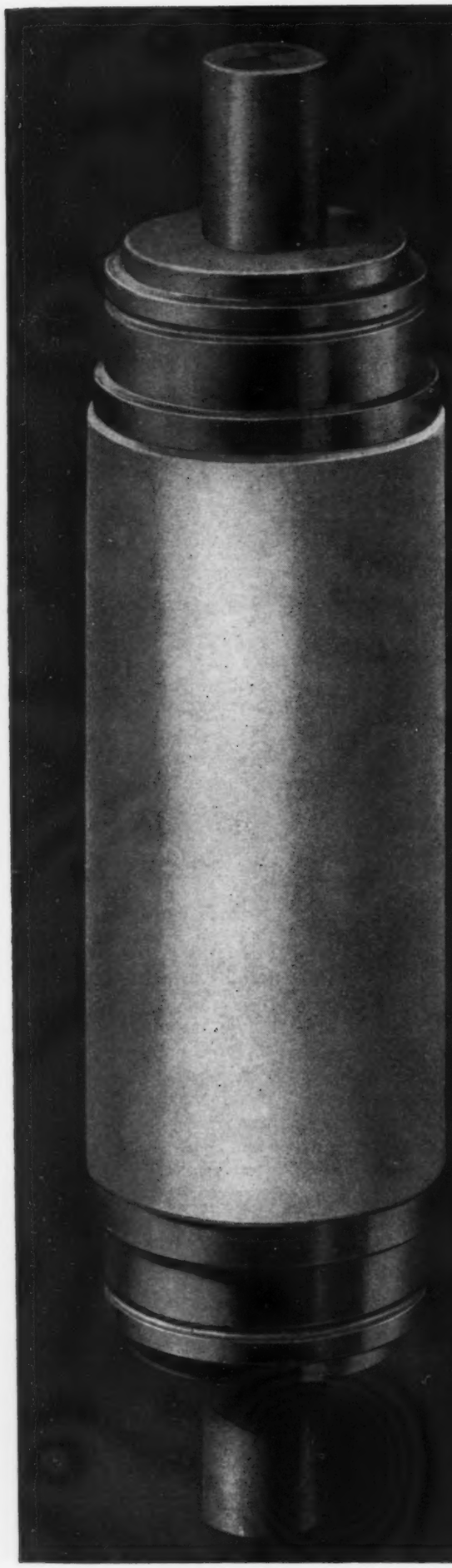
Gentlemen: Please forward names of firms manufacturing the new style Monel dye beam.

Name_____

Company_____

Address_____

TW 2-23-38



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CALENDER ROLLS

is the natural result of the broadest experience in the textile industry

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ENGINEERS AND MANUFACTURERS
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Transcendent!

in Quality,
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Performance

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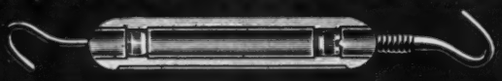
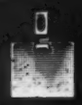
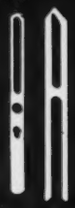
HARNESS ACCESSORIES







DROP WIRES

Quality

that knows no compromise

STEHEDCO quality always has and always will require the finest of materials, exclusively designed precision machinery, and workmanship by the most skilled of artisans. Such items cannot be obtained at cut rates – therefore STEHEDCO products cannot be sold at cut rates.

Cheap loom harness equipment is not compatible with top-quality production.

The cost of STEHEDCO Harness is infinitesimal compared with the worth of the potential production to be realized from it. The so-called "*saving*" on cheap harness is lost many times over in poor grade fabrics produced.

Real quality cannot be compromised. That's why 9 out of 10 mills prefer STEHEDCO Loom Harness Equipment.

Steel Heddle Mfg. Co.

"STEHEDCO" HEDDLES · REEDS · FRAMES AND HARNESS ACCESSORIES

2100 W. Allegheny Avenue, Philadelphia, Pa.

BRANCH OFFICES

Providence, R. I. — Greenville, S. C. — Dallas, Texas — Atlanta, Ga. — Greensboro, N. C.

PLANTS

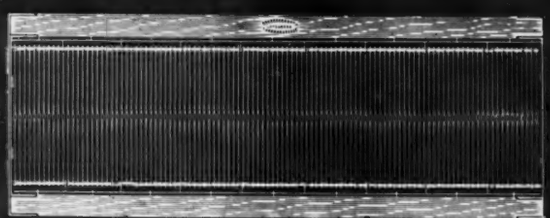
Philadelphia, Pa. — Atlanta, Ga. — Greenville, S. C. — Montreal, Que. Canada

FOREIGN OFFICES

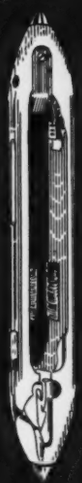
Huddersfield, England — Sao Paulo, Brazil — Shanghai, China
Mexico, D. F. Mexico — Quito, Ecuador, S. A. — Calcutta, India
Sydney, Australia
Goteborg, Sweden

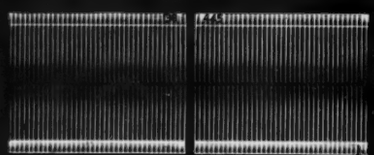
ATLANTA TWINE HARNESS

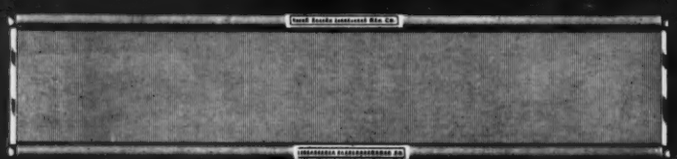
HEDDLE FRAME (Patented)



SHUTTLES made by our subsidiary Southern Shuttles, Inc.



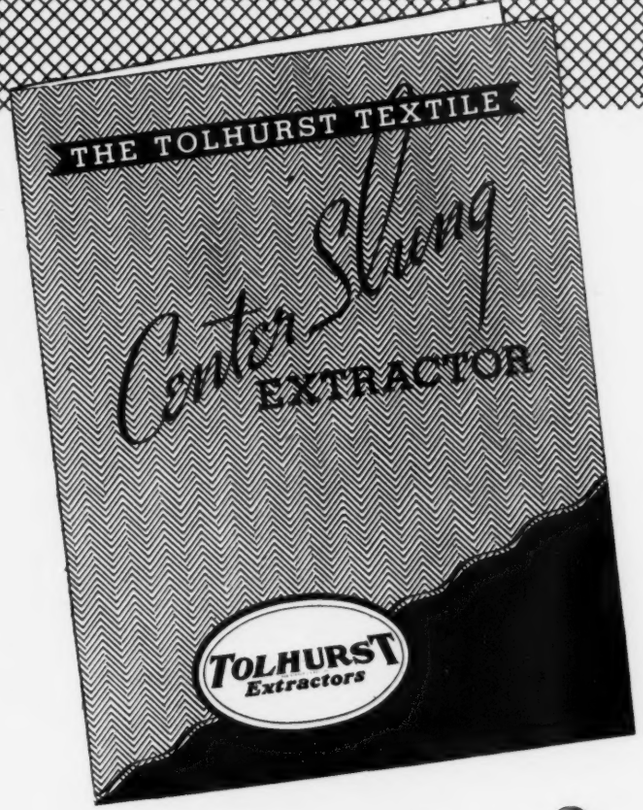




PITCH BAND REED
(Patented)

ALL-METAL REED

THIS NEW FOLDER TELLS HOW YOU CAN BRING LOWER COST EXTRACTION TO YOUR MILL



THE TEXTILE INDUSTRY'S NEWEST EXTRACTOR

"CENTER SLUNG"

In this folder, you will find described Tolhurst's newest extractor—the "Center Slung." It's built for top performance. For quicker, more thorough extraction. For easier loading and unloading. Whether your processing operations call for extracting after bleaching, dyeing, carbonizing, or for impregnating or silk degumming, this folder shows fairly how you may expect marked savings in time, money and labor with a "Center Slung" installation. A copy of the folder will be mailed you on request — use the coupon below.

TOLHURST CENTRIFUGUL DIVISION
American Machine and Metals, Inc.
100 Sixth Avenue, New York, N. Y.

BRANCHES:
Chicago, Detroit, San Francisco, Atlanta, Albany

TOLHURST EXTRACTORS

TOLHURST CENTRIFUGAL DIVISION,
100-6th Ave., New York, N. Y.

Please mail new "Center Slung" folder.

NAME_____

COMPANY_____

STREET_____

CITY_____ STATE_____

Commercial Credit Company

Baltimore

Twenty Sixth Annual Consolidated Financial Report

AS OF DECEMBER 31, 1937

ASSETS

Cash		$ 28,077,827.23
Motor Lien Retail Time Sales Notes	$155,015,564.40	
Motor Lien Wholesale Notes and Acceptances	60,740,756.14	
Industrial Lien Retail Time Sales Notes	57,795,609.16	
Open Accounts, Notes and Factoring Receivables	33,893,956.19	307,445,885.89
Sundry Accounts and Notes Receivable		740,537.05
Customers' Liability on Foreign Drafts and Letters of Credit (Contra)		138,683.77
Repossessions in Companies' possession at depreciated values:		
Motor Cars	$ 145,112.22	
Other than Motor Cars	16,689.83	161,802.05
Investments:		
Sundry Marketable Securities at book value (market value $442,379.50)	$ 414,935.13	
Investment Securities held by American Credit Indemnity Company of New York, at market value	4,775,710.42	5,190,645.55
Deferred Charges:		
Interest and Discount Prepaid, etc.	$ 1,103,024.37	
Unamortized Debt Discount and Expense	820,288.00	1,923,312.37
Furniture and Fixtures		4.00
		$343,678,697.91

LIABILITIES

Unsecured Short Term Notes (Subsidiaries $6,496,155.88)		$171,786,655.88
Accounts Payable:		
Credit Balances of Manufacturers and Selling Agents held by Factoring Subsidiaries	$ 2,164,214.51	
Sundry, including Accruals, Federal and other Taxes	6,123,728.72	8,287,943.23
2¾% Debentures due 1942	$ 35,000,000.00	
3¼% Debentures due 1951	30,000,000.00	65,000,000.00
Contingent Liability on Foreign Drafts and Letters of Credit (Contra)		138,683.77
Contingent Reserves:		
Margin due Customers only when Receivables are collected.	$ 6,054,633.01	
Dealers' Participating Loss Reserves	6,268,432.59	12,323,065.60
Reserves for:		
Possible Losses and Contingencies	$ 5,226,991.37	
American Credit Indemnity Company of New York, Reserves required by Insurance Regulations, plus Voluntary Reserves of $500,000	1,122,606.64	
Deferred Income and Charges (unearned)	15,121,208.85	21,470,806.86
Capital Stock and Surplus:		
Minority Interests (Common Stock and Surplus—Subsidiaries)	$ 44,668.00	
Preferred Stock, $100 par value		
499,646 shares authorized—121,948 shares outstanding designated as:		
4¼% Cumulative Convertible	12,194,800.00	
Common Stock, $10 par value:		
(3,000,000 shares authorized—1,840,900 full shares and 1,094 shares of fractional scrip outstanding)	18,419,940.00	
Capital Surplus	$17,964,493.87	
Earned Surplus	16,047,640.70	34,012,134.57	64,671,542.57
		$343,678,697.91

Summary of Operations

	Year Ended Dec. 31, 1937
Gross Receivables Purchased	$933,854,331.85
Gross Operating Income	$ 33,966,634.46
Sundry Income	700,218.37
Gross Income	$ 34,666,852.83
Operating Expenses:	
Officers, Employes and Agents Salaries, Commissions and special compensation	7,426,642.70
Taxes (except Federal Income and Undistributed Profits)	787,025.19
Management Expenses	6,646,659.03
Reserves for Losses in Excess of Net Losses (Credit)	912,635.55
Net Income before Interest and Discount	$ 20,719,161.46
Interest and Discount Charges	3,781,604.71
Reserve for Federal Income Taxes	2,916,609.59
Net Income from Operations	$ 14,020,947.16
Less Net Income for Minority Interests	4,844.55
Net Income on Capital Stocks of Commercial Credit Company	$ 14,016,102.61
Reserve for Federal Surtax on Undistributed Profits	422,983.50
Net Income credited to Surplus	$ 13,593,119.11

	1937	1936
Interest and Discount Charges—Times Earned	5.47	8.50
After Federal Surtax on Undistributed Profits:		
Net Income per share on 4¼% Cumulative Convertible Preferred Stock outstanding at end of period	$111.46	$97.84
Dividend Requirements on 4¼% Cumulative Convertible Preferred Stock outstanding at end of period—Times earned	26.20	23.02
Net Income per share on Common Stock, including scrip, outstanding at end of period	$7.09	$6.07

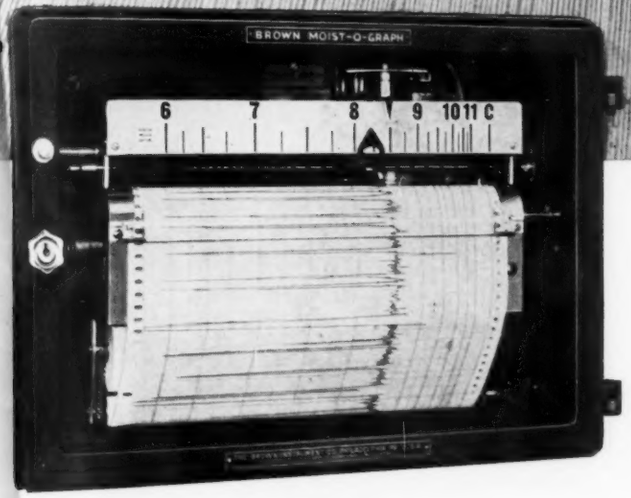
Analysis of Earned Surplus

Net Income credited to Surplus	$ 13,593,119.11
Excess Reserves on closed banks returned to Earned Surplus	41,828.22
Total	$ 13,634,947.33
Less dividends paid in cash on:	
4¼% Cumulative Convertible Preferred Stock	518,752.87
Common Stock ($4 and $1.50 extra per share)	10,123,656.50
Transferred to reserve for depreciation of securities to market value (American Credit Indemnity Company of N. Y.)	374,424.38
Furniture and Fixtures written off	359,825.20
Total	$ 11,376,658.95
Net Surplus Credit for period	$ 2,258,288.38
Earned Surplus Balance, beginning of period	13,789,352.32
Earned Surplus Balance, end of period	$ 16,047,640.70

Commercial Credit Company conducts a highly specialized form of commercial banking through the purchase of receivables created by the sale of merchandise from the manufacturer to the consumer. It purchases current open accounts from manufacturers and wholesalers, who collect the accounts as usual, and limit their credit losses. Its subsidiaries, Textile Banking Company, Inc., and Edmund Wright Ginsberg Corporation, New York, offer "Factoring" service, under which they purchase and collect accounts, assuming all credit risk. Its subsidiary, American Credit Indemnity Company of New York offers "Credit Insurance" which reimburses credit losses in excess of an agreed percentage on annual sales, and guarantees specific accounts. The Company specializes in time payment financing of automobiles, refrigerators, heating equipment, radios, Diesel engines, time and labor saving machinery and other articles of a durable nature.

CONTROL MOISTURE REGAIN *HERE*

Increases Slasher Production 40% to 60%



A continuous direct reading record of the moisture content of every beam sized is made by the Moist-o-Graph on a 12-in. strip chart. A scale, also calibrated in terms of per cent regain and mounted above the chart, enables the operator to set the controller at the desired point to insure the required moisture regain.

Results of a long series of tests in some of the largest cotton mills in the country prove that when moisture regain of sized cotton yarns runs uniformily between 7% and 8%, slasher production can be increased up to 400 lbs. per hour on two cylinder slashers without weave room complaints.

In one large, nationally-known mill, since the installation of Brown Moist-o-Graph Control, production has been increased to the point where the theoretical output of two slashers now equals the production of three slashers.

A quality fabric is produced with lower weave room humidity, because the fibers have not been over-dried and consequently, they are capable of absorbing the same amount of moisture as in their natural state.

The Brown Moist-o-Graph operates on the principle that for every per cent regain yarn has a corresponding electrical resistance. As the cotton yarn passes over the back press roll—the Moist-o-Graph detecting roller, in direct contact with the yarn, measures the moisture content continuously and directly records it in terms of per cent regain.

There are many other advantages described in Bulletin 93-1. Write THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.*, 4509 Wayne Avenue, Philadelphia, Pa. Offices in all principal cities. Toronto, Canada: 117 Peter Street—Amsterdam-C, Holland: Wijdesteeg 4—London, England: 70 St. Thomas, Street, S.E.1.

BROWN MOIST-O-GRAPH

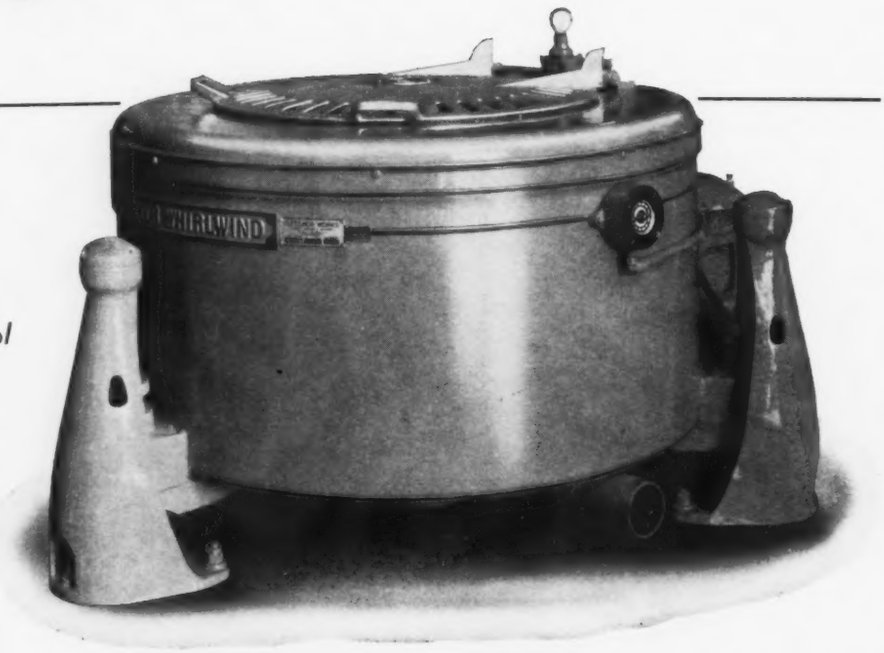
To Measure and Control is to Economize

FLETCHER

first in improvement AGAIN!

Automatic
HYDRAULIC
BRAKE
with "finger-tip" control
(no push—no pull—
no strain)

now a feature of
FLETCHER
"WHIRLWIND"
EXTRACTOR



Fletcher is proud to present the world's first extractor with the type of brake used on most modern cars. Advantages include longer brake life, smoother stop, more even wear, much easier operation. The new all-steel safety casing is another advantage adapted from the automotive field.

This extractor retains the well-known Fletcher features, including monel metal basket drum; inside of basket absolutely smooth; over-sized ball bearings; multiple V-belt motor drive; cast aluminum safety cover, fully interlocked.

WRITE FOR DETAILS—

get the Facts
and you'll
get a Fletcher!

ASK ABOUT
FLETCHER "APEX" TWISTER
TOO!

One of the most highly efficient twisters made. Offers much greater operating convenience and visibility . . . unusual lubrication features . . . a life-time of satisfactory service. Has the famous Fletcher "Oilwell" Spindles, of course.

FLETCHER

THROWING MACHINERY FOR SILK AND RAYON - - CENTRIFUGAL EXTRACTORS - - NARROW FABRIC LOOMS

FLETCHER WORKS • GLENWOOD AVENUE AND SECOND STREET • PHILADELPHIA

FORMERLY SCHAUM AND UHLINGER - ESTABLISHED 1850

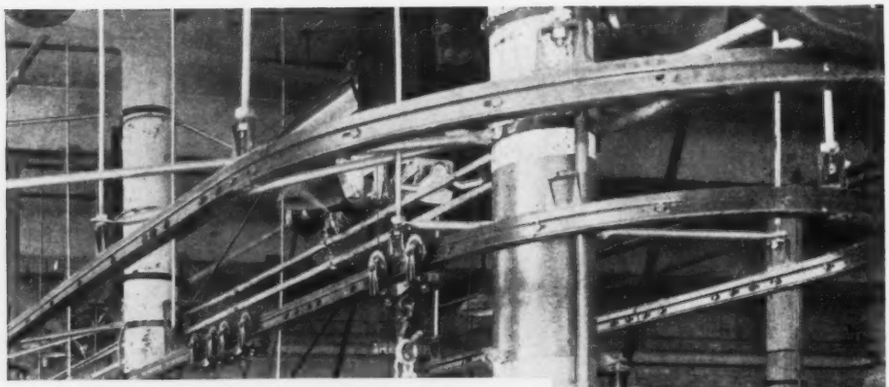
SMOOTH SAILING AHEAD

A sentinel of highest quality in any industrial process, Diamond Brand Alkalies always assure smooth sailing ahead. The strict standards of Diamond Alkali manufacture, the vigilant laboratory control at every important step and the exacting yardstick of quality established by Diamond in the finished product guarantees the highest possible commercial Purity and Uniformity.

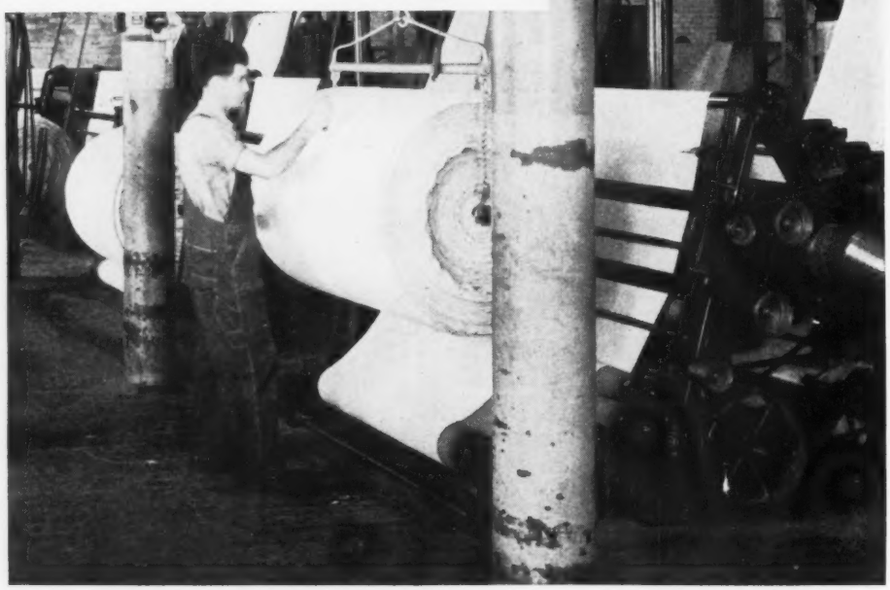
DIAMOND ALKALI COMPANY

PITTSBURGH AND EVERYWHERE

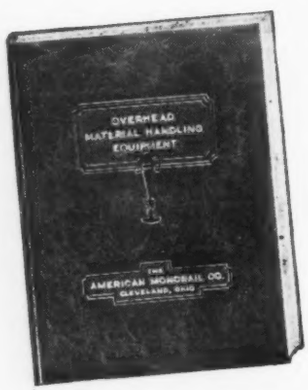
ALKALI



Only half the handling!



This modern system of overhead handling brings lower costs reduces damage and improves operation wherever installed.



Send for this book

Used as a standard reference in many technical libraries.

When loads travel over a properly designed MonoRail system they reach process machines at the most advantageous height. No excessive lifting or shifting is required. In most cases beams and rolls are merely lowered into position. This alone saves half the handling.

By providing free movement of stock between processes, storage is often eliminated thereby further reducing the amount of handling required. Overhead handling releases floor space for more profitable use and permits narrow alleys between machines.

Stock and machinery are protected when heavy loads are carried overhead. Handling stains on yarn or fabric are kept at a minimum—floors no longer subject to wear.

It will pay you to learn how easily these savings can be made by applying American MonoRail equipment in your mill. Our engineers are located conveniently close to you. They will be glad to offer their assistance without obligation. Write for a copy of the new book describing Overhead Handling and Automatic Cleaning Equipment.

THE AMERICAN MONORAIL CO

13108 Athens Ave., Cleveland, O.

FREE, BUT THEY TELL YOU A LOT

Two innocent looking booklets . . . . charged with money-saving for the mill man who reads them and applies the data they contain. Both are heavy with helpful information. They are practical and to the point.

Hunter's Booklet on Piece Carbonizing contains eight pages of text and illustrations. It will tell *any* mill man—*regardless of what unit he now operates*—how he can reduce costs and definitely increase the dollar value of his carbonized goods.

The booklet on the left is a most important aid to any mill contemplating or now doing piece carbonizing. It outlines clearly and fully the commercial and mechanical requirements for satisfactory carbonizing.

Hunter's new brochures on fulling and cloth scouring have several important pages of text and illustrations describing the means and method whereby:

(a) some six score mills have increased Fulling loads 50-100% and reduced Fulling time one-third or more, and

(b) substantially cut Rinsing time; save soap, water, and labor.

MAIL THE COUPON

James Hunter Machine Co.
North Adams, Mass.

FREE:

— Send Brochures on Carbonizing
— Send Brochure on Fulling and Scouring
— Data on Stock and Tenter Drying

.....

.....

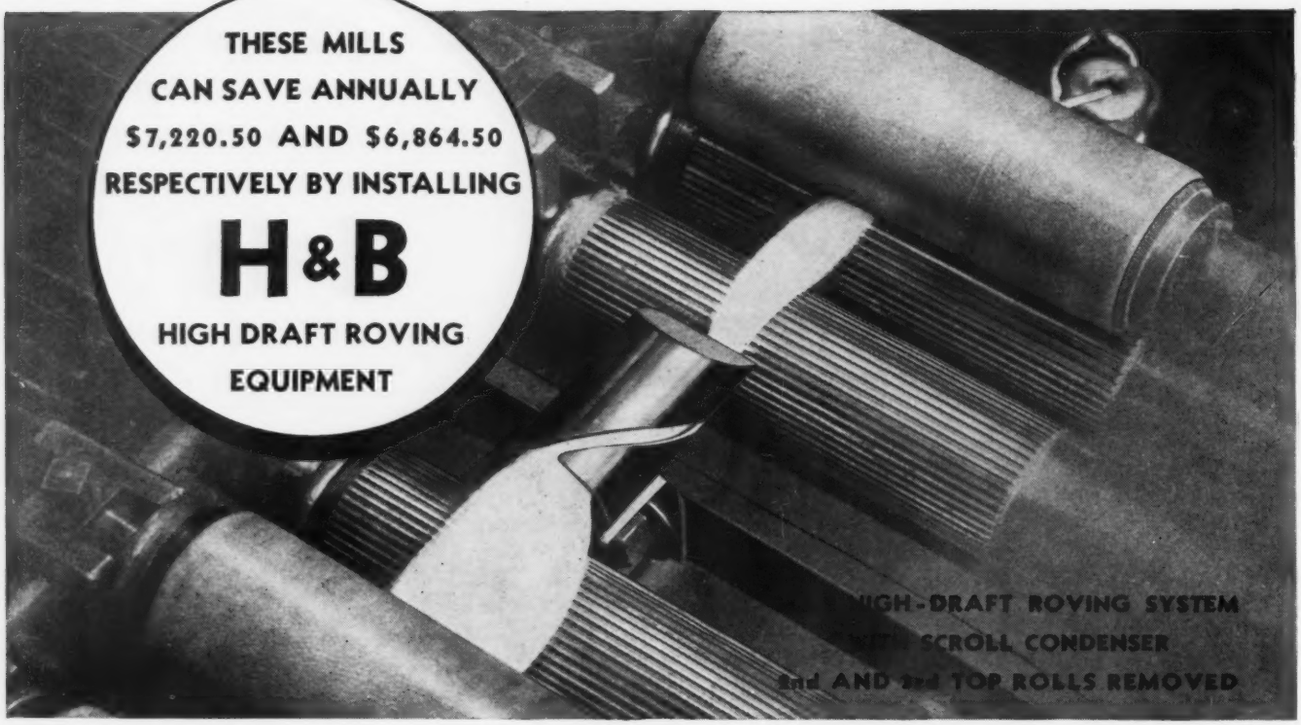
.....

JAMES HUNTER MACHINE COMPANY

NORTH ADAMS, MASS.

SOUTHERN AGENTS: Carolina Specialty Co., Charlotte, N. C.

WESTERN REPRESENTATIVE: E. G. Paules, 343 Bendix Bldg., 1206 Maple St., Los Angeles, Cal.



AN H&B TECHNICAL SURVEY DETERMINED THESE FACTS. HERE ARE THE DETAILS:

IN A COARSE GOODS MILL

Producing at time of survey 16,754 lbs. per 80 hour week of 4 hank roving in 3 operations and 5,023 lbs. per week of 1.50 hank roving in two operations, or a total 21,777 lbs. per week.

Direct cost per week, 4 hank roving	$245.94
Direct cost per week, 1.50 hank roving	30.19
Total direct cost per week	$276.13

Direct cost of same job by discarding 2 operations on the 4 hank roving and 1 operation on the 1.50 hank roving and applying H & B 4-Roll High-Draft Roving equipment to intermediate frames:

Direct cost per week, 4 hank roving	$116.34
Direct cost per week, 1.50 hank roving	15.38
Total direct cost per week	$131.72
SAVINGS PER WEEK, 4 hank roving	$129.60
SAVINGS PER WEEK, 1.50 hank roving	14.81
TOTAL SAVINGS PER WEEK	$144.41
TOTAL SAVINGS PER YEAR (50 wks. x $144.41)	$7,220.50
RETURN ON INVESTMENT OF $7,956.00 f.o.b. Pawtucket	90%

IN A FINE GOODS MILL

Producing at time of survey 11,292 lbs. per 80 hour week of 10.50 hank roving for filling and 15,842 lbs. per week of 8 hank roving for warp in 4 operations, or a total of 27,134 lbs. per week.

Direct cost per week, 10.50 hank roving	$192.98
Direct cost per week, 8 hank roving	260.13
Total direct cost per week	$453.11

Cost of same job by discarding 2 operations and applying H & B 5-Roll High-Draft Roving equipment to existing 2nd intermediate frames.

Direct cost per week, 10.50 hank roving	$147.58
Direct cost per week, 8 hank roving	168.24
Total direct cost per week	$315.82
SAVINGS PER WEEK, 10.50 hank roving	$ 45.40
SAVINGS PER WEEK, 8 hank roving	91.89
TOTAL SAVINGS PER WEEK	$137.29
TOTAL SAVINGS PER YEAR (50 wks. x $137.29)	$6,864.50
RETURN ON INVESTMENT OF $7,920.00 f.o.b. Pawtucket	87%

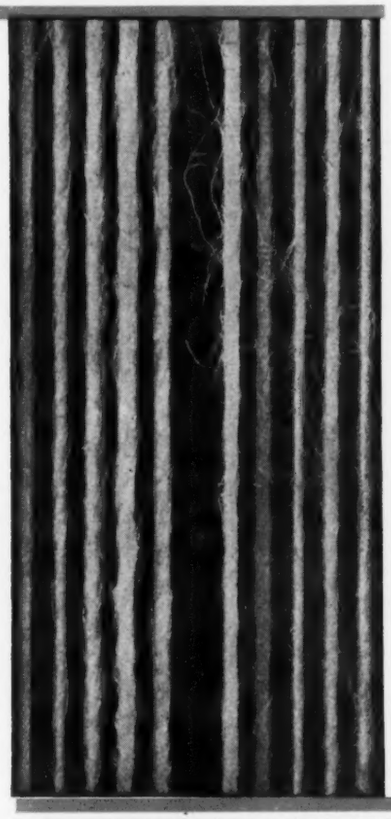
NOTE The investment figures given do not include cost of transportation, of installation or of additional sliver cans. On the other hand, the savings do not include those made in power or indirect labor, so that one omission will approximately balance the other. • H & B High-Draft Roving equipment is usually applied to intermediate frames. It is designed to take a sliver from the drawing frame and draft up to 35, producing up to 4.50 hank roving in one operation, for regular or long draft spinning. The number of rollers (4 or 5) is determined by the drafting requirements. • It can be furnished with new roving frames or applied to ANY MAKE of existing frame. It is now successfully operating in over 50 mills. • Let an H & B Technical Survey determine what this system will do for YOU. One of our engineers will call on request without obligating you in any way.

H&B AMERICAN MACHINE COMPANY

• • • TEXTILE MILL MACHINERY • • •

PLANT AT PAWTUCKET, RHODE ISLAND

BOSTON OFFICE: 161 Devonshire St.; ATLANTA OFFICE: 815 Citizens and Southern National Bank Bldg.; CHARLOTTE OFFICE, 1201-3 Johnston Bldg.



Which warps would you run...

...if interested in profit...?

On the face of it, you would run smooth warps, like those on the left . . . because they have better fiber-lay . . . resulting in fewer loom-stops . . . higher weave-room efficiency and, therefore, *greater profit.*

However, fiber lay is only one feature of proper sizing. Increase in breaking strength, decrease in elongation and low kettle costs are equally important . . . and all obtained to an unsurpassed degree by HOUGHTO-SIZE.

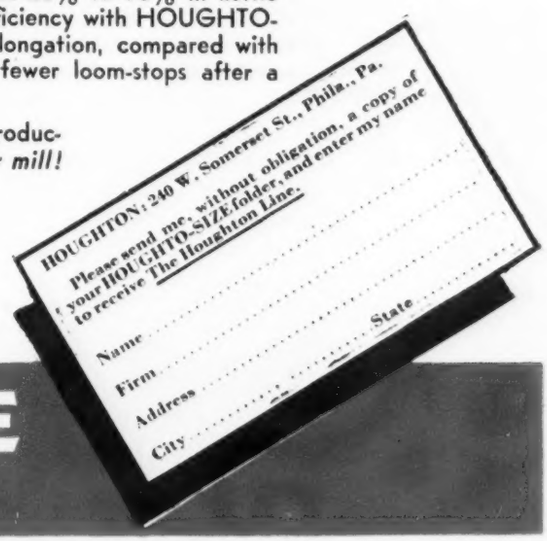
Daily, all over the country, mills are profiting through the use of HOUGHTO-SIZES . . . and reporting savings of 25% to 75% in kettle costs. One mill reports a 3% increase in loom efficiency with HOUGHTO-SIZE. Another reports 50% less decrease in elongation, compared with former sized warp. Still another claims 36% fewer loom-stops after a prolonged comparative test on 10 looms.

HOUGHTO-SIZE your warps for greater production . . . greater profits. Ask us to prove it *in your mill!*

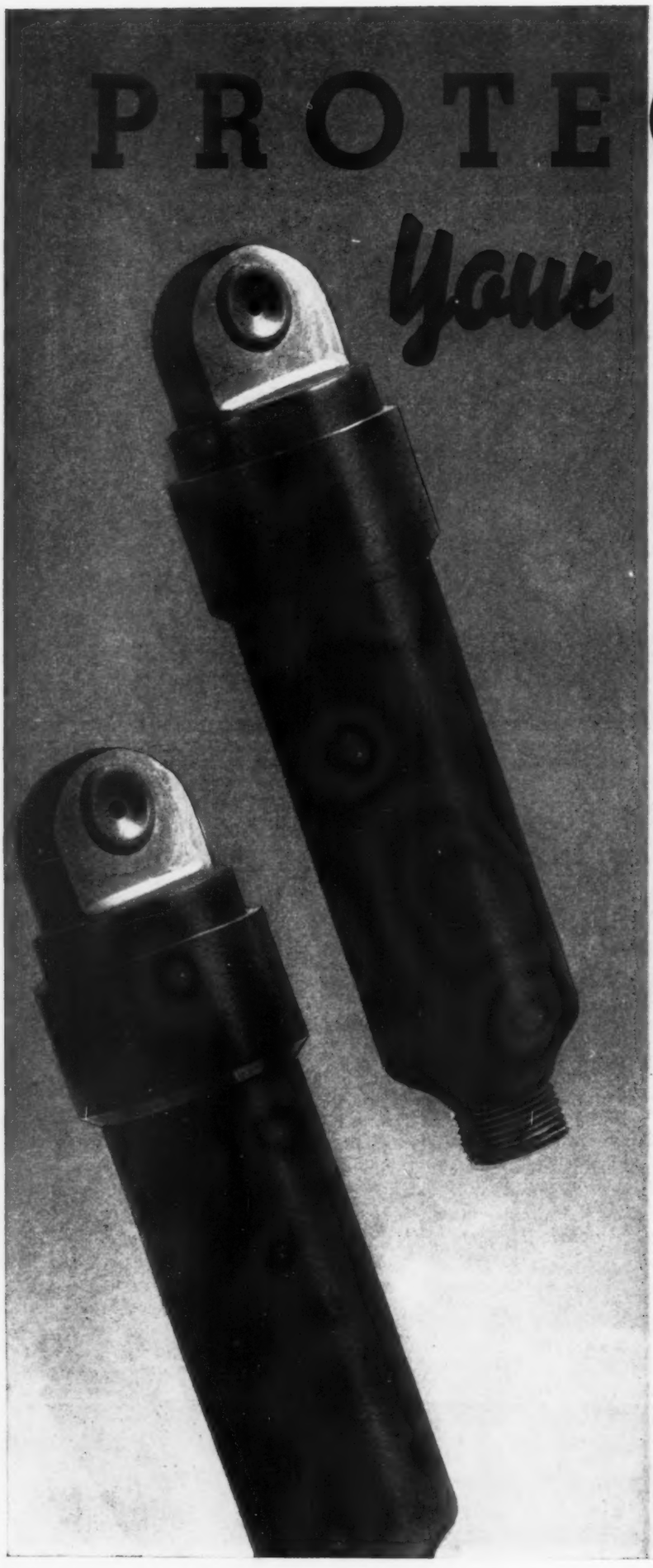
E. F. HOUGHTON & CO.

PHILADELPHIA

Charlotte Chicago


HOUGHTON: 240 W. Somerset St., Phila., Pa.
Please send me, without obligation, a copy of your HOUGHTO-SIZE folder, and enter my name to receive The Houghton Line.
Name
Firm
Address
City
State

HOUGHTO-SIZE
FOR COTTON WARPS



PROTECT *Your Rayon*

ACE HARD RUBBER is used by the largest Rayon manufacturers for solution handling, parts in the spinning bath and for the spinning machine, parts for the protection of the spinning machine and for hundreds of other applications in washing, bleaching and desulphurizing.

Avoid the contamination of metallic salts by the use of this equipment.

Our engineers have developed hard rubber compounds that meet every specific requirement in your industry.

AMERICAN HARD RUBBER COMPANY

11 Mercer Street, New York, N.Y.
111 West Washington Street, Chicago, Ill. • Akron, Ohio

LINT-FREE

THAT MEANS MORE "Mileage" FOR WESTINGHOUSE MOTORS

Protection against lint in the motors that drive your spinning frames, roving frames and other cotton textile machinery is insurance for your production schedules.

Westinghouse motors have these four provisions to insure them — and you — against "lint trouble:"

1. Specially tapered rotor vanes, against which lint cannot pack, and which circulate air at a velocity that will remove lint.
2. Glass-smooth windings prevent lint from clinging.
3. Large air passages.
4. No screens to require cleaning.

Thermoguard Protection, making motors self-protecting against overheated windings, can be applied to lint-free motors.

For complete information on these and other time-proved advantages of Westinghouse Lint-Free Motors, call your nearest Westinghouse Office or Industrial Agent.

Dependable drive for textile machinery — Westinghouse Lint-Free Motors and "De-ion" Linestarters.

Loom Motors—extra strength, high efficiency, readily accessible oilers, long-life bearings.

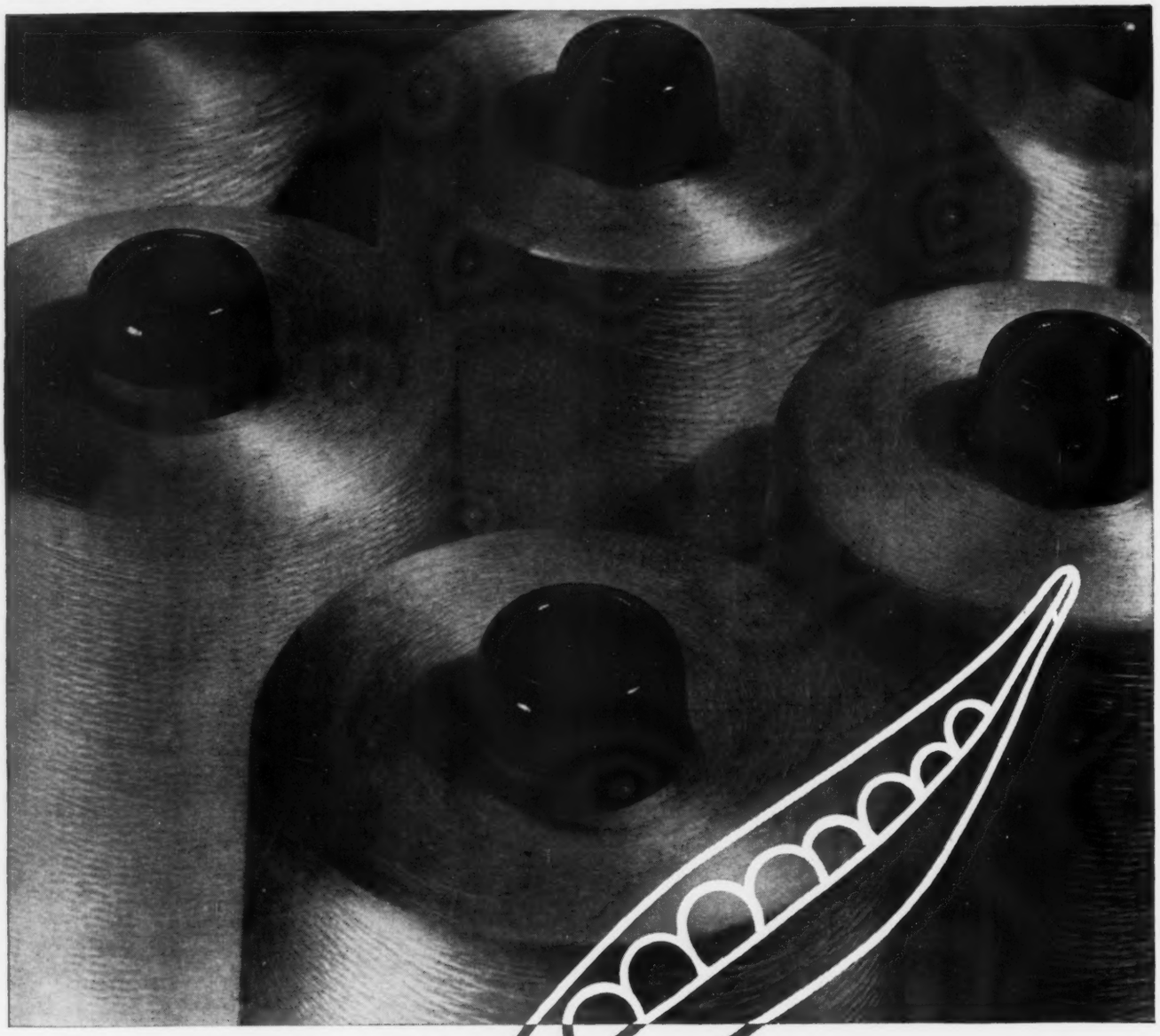
WK — 18 Starter — Guards loom motor against overload damage. Safely and quickly reset.

"De-ion" Combination Linestarter — "De-ion" Motor Starter and Nofuze circuit breaker combined in one compact enclosure.

FROM POWER LINE TO DRIVEN MACHINE YOU ARE ALWAYS SURE WITH **Westinghouse**

MOTORS • CONTROL • CIRCUIT PROTECTIVE EQUIPMENT

YOUR REPUTATION ▲ ▲ ▲ WINDING MAKES IT OR BREAKS IT

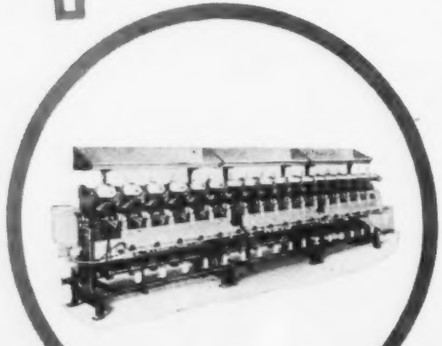


THE STANDARD OF UNIFORMITY

NOT "PEAS IN A POD" BUT FOSTER MODEL 75 CONES

• Since time immemorial "like peas in a pod" has served to express maximum uniformity. But today in the silk and rayon industries "like Foster Model 75 Cones" can fittingly replace this old maxim, since the Foster Model 75 machine has improved on Mother Nature with respect to uniformity of product.

• Foster Model 75 cones are uniform because tension and pressure devices on the machine can be accurately adjusted and because once set they stay set.



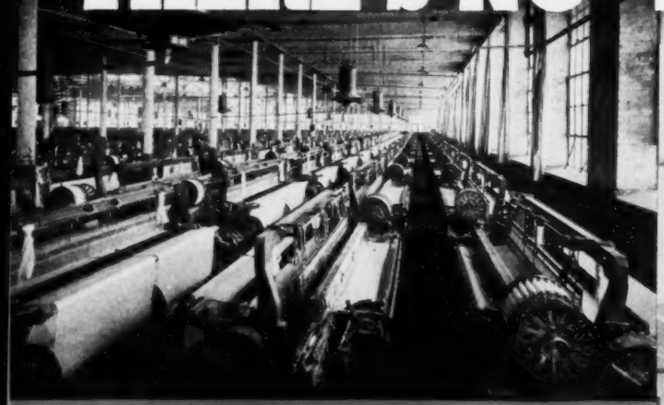
• Other features of the machine include slow starting to prevent yarn strain and complete protection from oil stains.

• It is perhaps superfluous to add that uniform cones assure uniform knitting and warping.

Foster Machine Co., Westfield, Mass.

FOSTER MODEL 75 ▶ FOR WINDING SILK AND SYNTHETIC YARNS

THERE'S NO "JACK-OF-ALL-TRADES" IN PAINT!



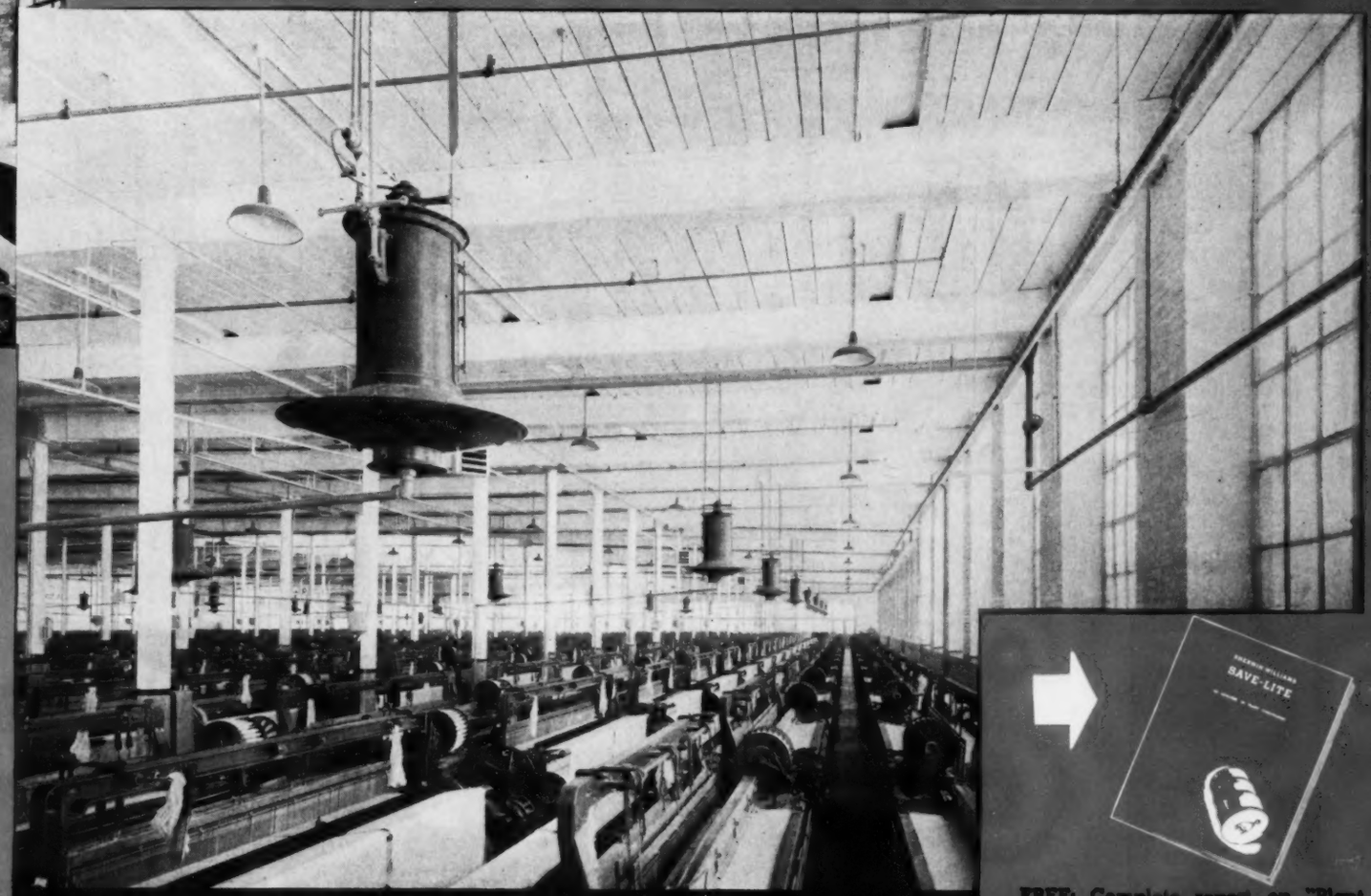
THAT'S WHY SAVE-LITE IS *Specially Formulated* FOR SPECIFIC PAINTING JOBS

If your operations are diverse, the conditions paint must meet are bound to be too varied for any one type of interior paint to give economical performance throughout your plant. There's no such thing as an all-purpose mill white!

For regular plant interior painting, you need a "general" paint . . . a white paint that gives the greatest possible light reflection, cleanliness and durability under all ordinary conditions. That means Save-Lite, regular—the basic Sherwin-Williams Save-Lite.

For those sections of your plant where various degrees of heat, moisture and fumes prevail, the several specially formulated types of Save-Lite each do their specific jobs for a longer period of time and with the greatest possible economy.

Call in the Sherwin-Williams Painting Engineer for survey of your plant and specification of the right Sherwin-Williams Save-Lite for each and every part of it. No obligation.



WHAT A DIFFERENCE SAVE-LITE MAKES to the Alexander Mfg. Co., Forest City, N. C., manufacturers of white sheeting, sheets, and pillow cases. A bright, efficient working light now floods their weave room . . . speeding workers, heightening morale, inspiring orderliness.

FREE: Complete report on "Plant Conditioning". Every plant operator and maintenance engineer should have it. Write The Sherwin-Williams Co., Cleveland, Ohio, and all principal cities.

COVER THE EARTH

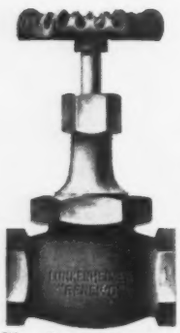
SHERWIN-WILLIAMS SAVE-LITE

THE PLANT CONDITIONING PAINT

SEE THE SHERWIN-WILLIAMS PAINTING ENGINEER

For Enduring Service Lunkenheimer Valves

as exactingly made as the finest Textiles

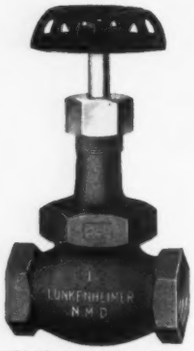


Plug Type "Renewo" Globe Valve

Bronze Gate Valve

"Ferrenewo" Globe Valve

"King-Clip" Gate Valve



"N-M-D" Globe Valve (Non-Metallic Disc)

"Causul" Metal Gate Valve, Monel Trim with Steel Stem

Stainless Steel Needle Valve

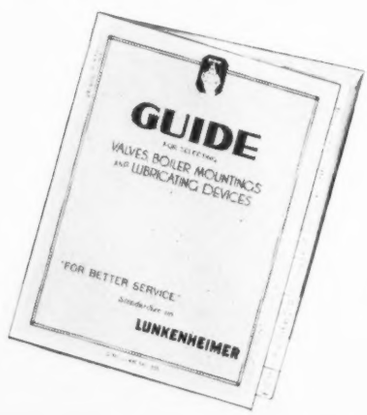
Iron Body Gate Valve

Regrinding Swing Check Valve

Lunkenheimer makes a large variety of bronze, iron, steel and anti-acid valves in a wide range of types and sizes. Exactingly made to provide long life with low maintenance expense, they find wide application on Textile Industry's many power and process lines.

Those illustrated and many more are shown in the Guide to Better Service, a ready reference in which valves are grouped for your convenience by pressure, type and use. It will prove a valuable aid in solving your valve problems. We will gladly send a copy on request.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK · CHICAGO · BOSTON
PHILADELPHIA · SAN FRANCISCO
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

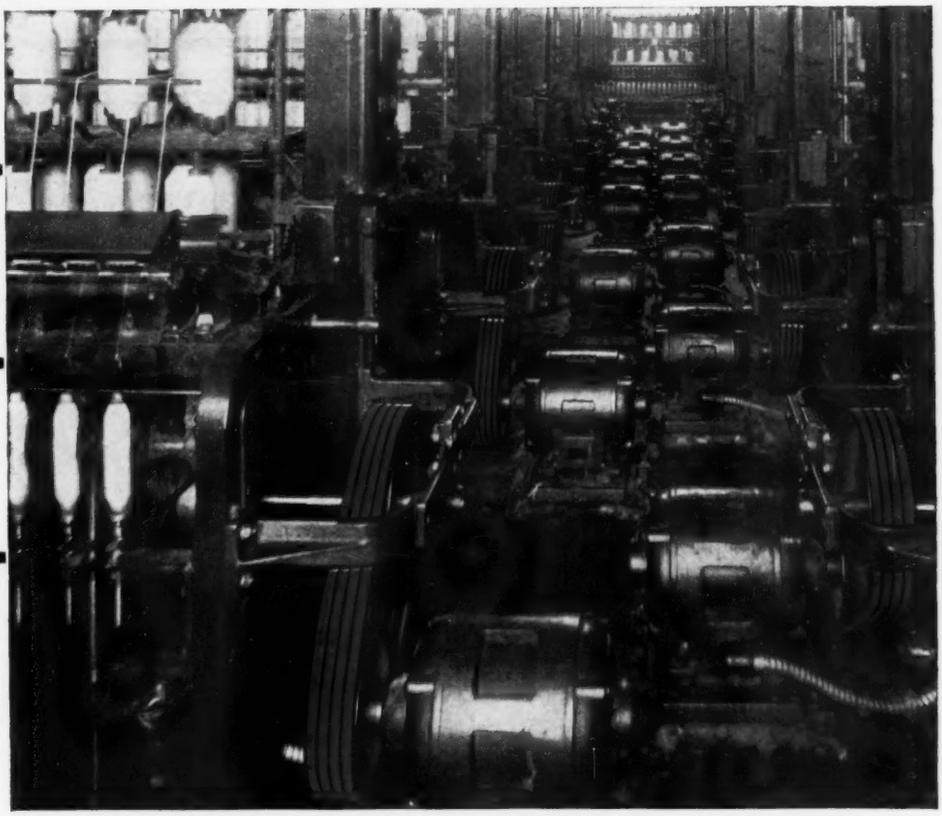


BOILER MOUNTINGS · LUNKENHEIMER VALVES · LUBRICATING DEVICES

23-50-51

MORE POWER TO YOU

efficiently and economically transmitted by



Typical textile mill installation of Condor Whipcord V-Belts in a limited space.

Condor Whipcord V-Belts

Condor PRODUCTS

V-Belt
Transmission Belt
Cone Belt
Air Hose
Acid Hose
Water Hose
Fire Hose
Steam Hose
Suction Hose
Molded Rubber Goods
Oilless Bearings
Hard Rubber Pot Eyes
Rubber Lined Tanks
Rubber Covered Rolls

MANY leading textile mills have found that with Condor Whipcord V-Belts on their drives, they not only get more of the available power but a smoother, more uniform power that is so vitally necessary in spinning, weaving, and other textile operations.

Condor Whipcord V-Belts embody a strength member that maintains its firmness, uniformity and flexibility even in the most punishing service. By placing this endless whipcord strength member in the neutral axis area with an extensible section above, a compression section below—stretch, slip, and internal breakdown have been reduced to a minimum. Results of this exclusive design are evident in the greater pulling power, the trouble-free operation, and the longer life of Condor Whipcord V-Belts.

You, too, will find that Condor Whipcord V-Belts increase the efficiency of your machines and keep your operating costs at a minimum. For better production, fewer "seconds" and more profit, follow the example of other textile mills—specify Condor Whipcord V-Belts.

9-POINT BALANCED CONSTRUCTION

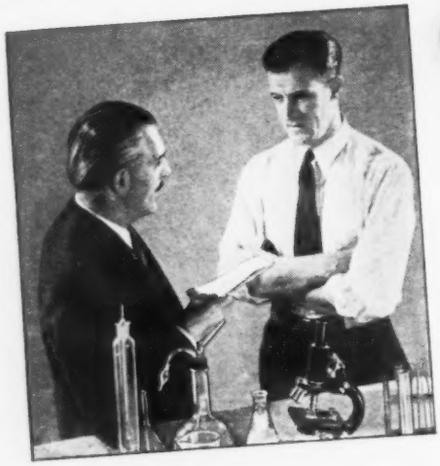
1. Minimum Inelastic Stretch.
2. Wide Margin of Strength.
3. Uniform Flexibility.
4. Maximum Resistance to Structural Breakdown.
5. Smooth Running.
6. Maximum Traction.
7. High Resistance to Side Wear.
8. Correct Lateral Reenforcement.
9. Matched Length.

MANHATTAN — PASSAIC, N.J.

THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES AND FACTORIES, 47 TOWNSEND ST., PASSAIC, N. J.

THESE FREE COLGATE-PALMOLIVE-PEET SERVICES SAVED MILL OPERATORS HUNDREDS OF DOLLARS LAST YEAR!

HERE THEY ARE. PUT THEM TO WORK FOR YOU NOW!



1 *FREE Consulting Service*

DURING the past twelve months, scores of mill operators asked our Technical Service Division to help them perfect better, cheaper formulas for their processes. In almost every case our technicians were able to recommend C.P.P. Formulas that were 100% effective and—*far less costly!*

If *you* are now using some costly "special" agent and wish advice on how you may improve the quality of your work and save money with standard C.P.P. Products, write to us today. Our technicians will gladly help you without cost or obligation.

2 *SPECIAL Textile Soaps for Every Need*

NO matter what *your* requirements may be, in the *complete* line of C.P.P. Products you will find detergents and wetting agents that will exactly fit your needs. Here are a few of our products of special interest to mill operators.

OLIVE OIL SOAP
Arctic Olive Oil Soap

LOW TITER SOAPS
Texolive Kwiksolv
Texolive Soap

TALLOW SOAPS
Arctic Crystal Soap Flakes
Arctic Crystal Granulated
Badger Flakes and Granulated
Pearl Flakes
Pearl Granulated

GLYCERINE

OLEIC ACID SOAP
Colgate Formula 10

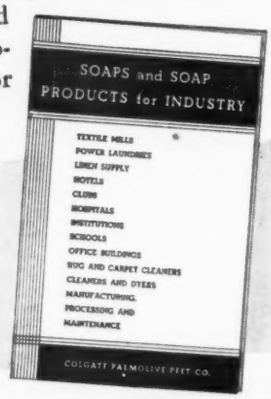
PALM SOAP
Miltex Palm Soap

FATTY ACID DERIVATIVES
Arctic Syntex A, T & M

BLENDED SOAPS
Green Arrow Soap Flakes
Colgate White Soap Flakes
Colgate Formula 25
Blended Palm Soap

3 *A Complete Catalog of Soaps for Industry*

IN the handy catalog, "Soaps and Soap Products for Industry," you will find full information on the most modern industrial soaps and soap products for textile processing. The products it lists can save you time and money on many operations. Send for your copy today.



COLGATE-PALMOLIVE-PEET CO.

105 HUDSON ST., JERSEY CITY, N. J.

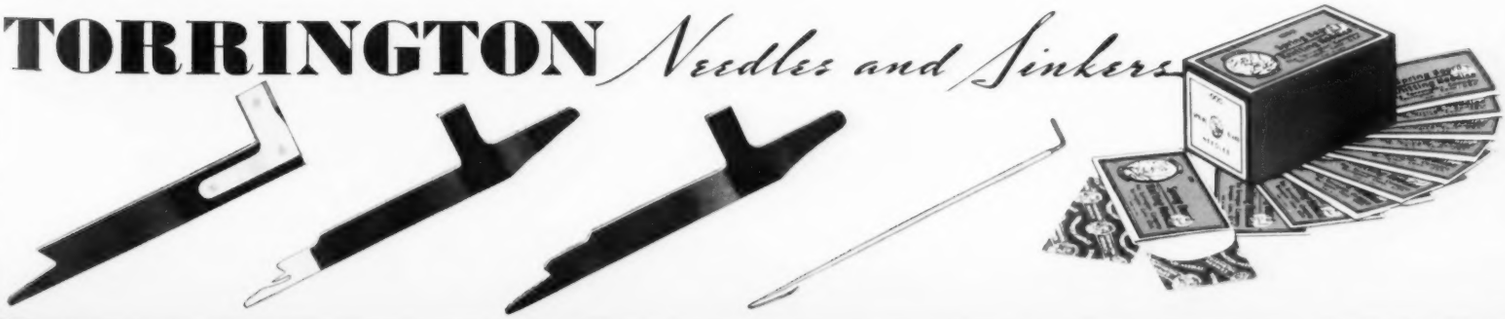
KANSAS CITY, KANS. JEFFERSONVILLE, IND. BERKELEY, CALIF.

SO THEY STICK TO TORRINGTONS!

Did you ever stop to consider how such a small detail as correct alignment of beards and grooves of needles can affect your knitting? Torrington Needles, Sinkers, Dividers and Split Dividers are *machine-made* with the strictest attention to detailed uniformity.

I see we aren't using anything but Torrington Needles now.
Yes—and for good reasons, too. For instance, take a close look at this Torrington Needle.
Looks all right to me.
Sure, but notice, for one thing, how accurately the beard is aligned with the groove.
Does that make much difference?
You bet. It is not only less likely to drop a stitch, but lays the stitches more evenly.
How do they get the needles so accurately aligned?
They use *machines* to align them. In fact, Torringtons are machine-made entirely. That means smoother knitting for us—so we stick to Torringtons!

TORRINGTON *Needles and Sinkers*



In every field of manufacturing there is one name that stands above the rest as the symbol of quality and value. In knitting needles the name Torrington on the red and green box is recognized by trustworthy knitters everywhere as symbolic of the utmost in needle value. It has been so since 1866 and in this age of high-speed production, which demands needles of *machine-made* strength and uniformity, it is more so than ever before.

THE TORRINGTON COMPANY TORRINGTON, CONN., U. S. A.

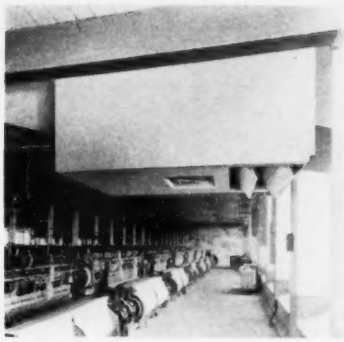
The Torrington Company, 1640 Fairmount Ave., Phila., Pa.
The Torrington Co., Inc., 200 Fifth Ave., New York, N. Y.
The Torrington Company, 538 South Wells St., Chicago, Ill.
The Torrington Company, Guilford Bldg., Greensboro, N.C.
The S. M. Supplies Co., 210 South Street, Boston, Mass.
The Torrington Co., Ltd., 137 Wellington St. W., Toronto 2, Ont.

Factories at
Torrington, Conn. — Coventry, England
Upper Bedford, Quebec — Aachen, Germany

Torrington LATCH Needles

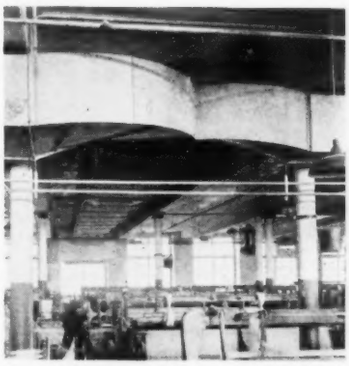
PARKS Automatic AIRCHANGER

designed to supplement your present humidifying system

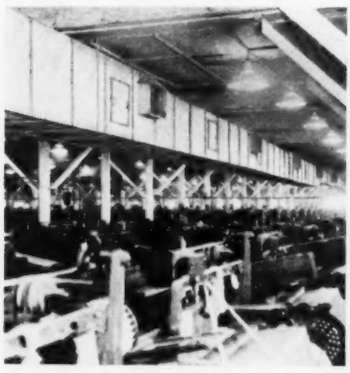


HOW IT WORKS

1 Fan in this mixing chamber draws in air . . . and propels it forward. Air comes from outside (opening not shown) . . . or from room (opening at bottom) or at times from both.



2 Pushed forward through ducts at ceiling, the amount of outside air . . . or its mixture with inside air . . . is regulated and automatically balanced with evaporation.

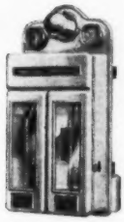


3 Discharged through a series of duct outlets, air circulates throughout the room. Free moisture from humidifiers evaporates, heat is removed . . . and marked uniformity, particularly of humidity, results.

4 The "measured service" air...and with it much of the heat . . . escapes through a series of automatic exhaust shutters. With a slight pressure in the room, leakage is outward, increasing uniformity.

Parks Graduated Automatic Airchanger Regulation (Patented)

The only system that can regulate as below



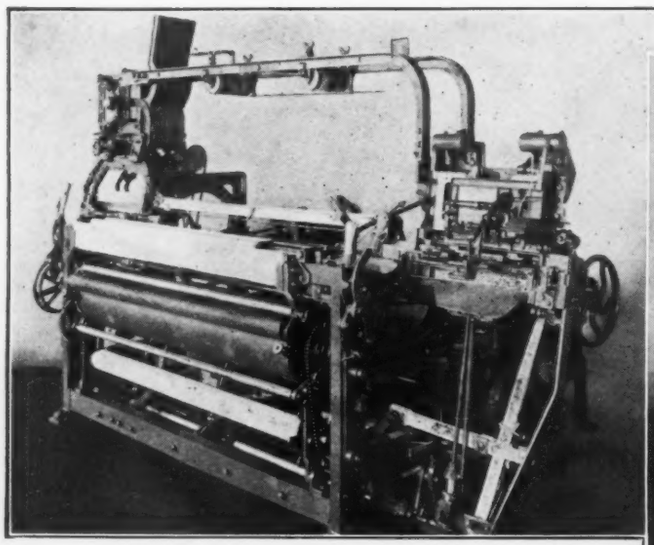
Psychrostat

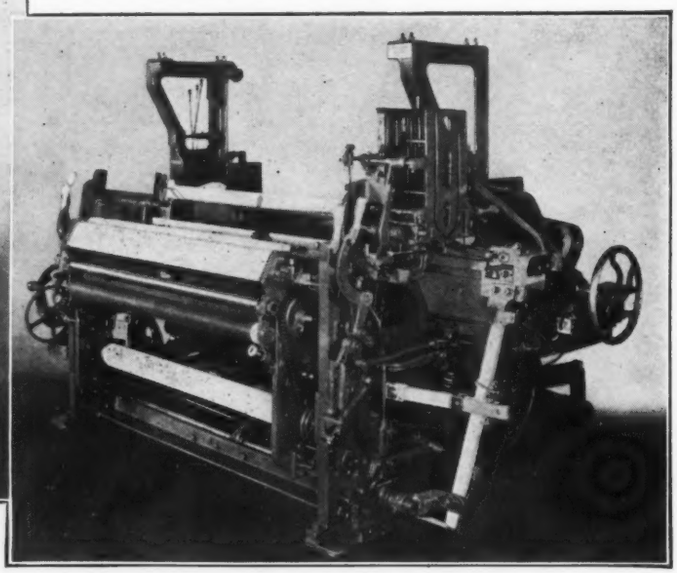
HUMIDITY LOW	Starts humidifiers Minimum incoming air
HUMIDITY ABOVE THE LOW / BELOW THE HIGH	Operates humidifiers Air change balanced
HUMIDITY HIGH	Maximum air change Humidifiers restricted

Bulletin 637 tells more

PARKS-CRAMER CO • FITCHBURG, MASS. • CHARLOTTE, N. C.

Another Repeat Order for Hyatt-Equipped Looms





Above, the well-known C & K Hyatt equipped S type loom. Opposite, one of the C5-50" C & K looms, likewise Hyatt equipped, ready for shipment to England.

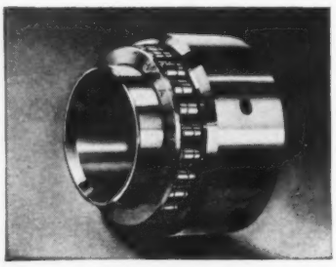
A few years ago a large English Mill bought 120 Crompton & Knowles completely Hyatt Roller Bearing equipped S-3 Shuttle Changing 2 x 1 Box Looms.

Recently this same English Mill purchased 456 C5-50" Cotton Looms and specified that all major bearing positions should be equipped with Hyatt Roller Bearings.

They specified Hyatts for their Cotton Looms because of the very decided advantages and satisfactory service they obtained from these time proven roller bearings in silk looms.

This represents a typical case of Hyatt repeat business. Once a mill has tried Hyatt Roller Bearings in looms they continue to specify them for succeeding orders of looms.

Mill men who want truly modern looms for weaving silk, rayon, cotton, wool or mixtures will specify modern Hyatt Roller Bearings for Crank, Cam, and Rockershafts, Take-up and Dobby Drive. Ask your loom builder and us for full particulars. Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.



HYATT *Roller Bearings*

Introducing
TALCON B.I.

Talcon, a new sulphonated softener with many desirable characteristics, is now available to the textile industry for finishing rayon or cotton piece goods. Check over these important values:

1. Talcon forms perfect solutions without scum at any concentration.
2. It can be used in either hard or soft water.
3. It produces both body and softness to the finished piece goods.
4. It is stable to Glaubers Salt, soda ash, and common salt in normal solutions.
5. It is stable in solutions containing low percentages of sulphuric acid.
6. It does not discolor fabrics under normal heat ranges.
7. Fabrics processed with it do not develop disagreeable odors in storage.
8. It is economical, because only small quantities are required.

Uniformity is assured in the production of Talcon through exacting technical control in manufacturing. Write for information.

PROVIDENCE DRYSALTERS DIVISION

HERCULES POWDER COMPANY
INCORPORATED

812B Hospital Trust Building, Providence, Rhode Island

SERVING THE CHEMICAL INDUSTRY
25th ANNIVERSARY YEAR
1913-1938

Providence Drysalters Division, Hercules Powder Company, 812B Hospital Trust Building, Providence, Rhode Island

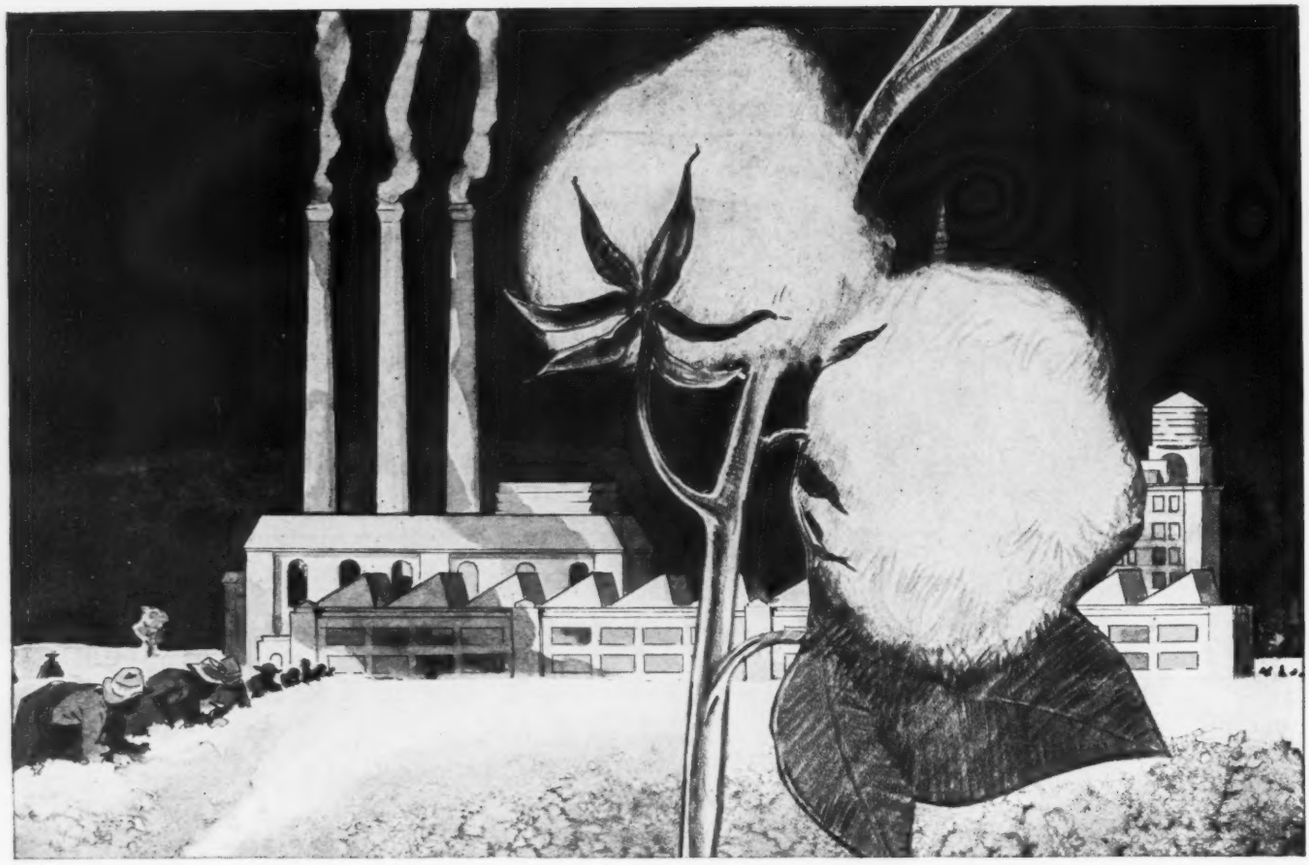
Please send information about Talcon, your new sulphonated softener.

Name _____

Company _____

Street _____

City _____ **State** _____ PMT-20



When It Comes To Coal . .

It Pays To Know

Do you know that the fuel you burn is the one brand best suited to the job? Are you cashing in on the economies made possible by a modernized and scientifically selected fuel supply?

The General Coal Company offers the textile field a coal to fit every purpose and every analysis requirement. Everything else being equal, the General Coal plan enables you to take full advantage of its ability to furnish a diversity of fuel requirements from a centralized source of supply.

Each General Coal Company brand stands for the utmost in that particular analysis. Strategic location to your plant means the efficient and expeditious filling of your contract requirements.

DENDRON GENCO RODA

CROZER PREMIX STOKER

GENERAL COAL COMPANY
PHILADELPHIA

BOSTON	CHARLOTTE, N.C.	DETROIT		CINCINNATI
NEW YORK	CHARLESTON, S. C.	PITTSBURGH	BUFFALO	IRWIN, PA.

Admiralty Coal DEPENDABLE ANTHRACITE

STONEGA WESTMORELAND COAL COMPANY CRITERION COAL

GENERAL COAL

FINISH WITH A PROFIT..

Use Laurel Textile Finishes

SILK — *SOAKING — DEGUMMING — FINISHING*

COTTON — *BLEACHING — DYEING — FINISHING*

WOOL — *LUBRICATING — SCOURING — FULLING*

RAYON — *SIZING — OILING — SCOURING — DYEING — FINISHING*

FOR nearly three decades manufacturers and processors of silk, cotton, wool and rayon yarns and fabrics have been using Laurel Textile Finishes to assure profitable end-results. The uniform quality of Laurel Products has a definite bearing on profitable finishing . . . they give smoother, softer, quicker knitting and weaving yarns.

If your profits are too close to borderline, explore for yourself the amazing possibilities of the Laurel laboratory-controlled Textile Finishes . . . there is one for every textile process and we will gladly work out with you the best application for your finishing problem.

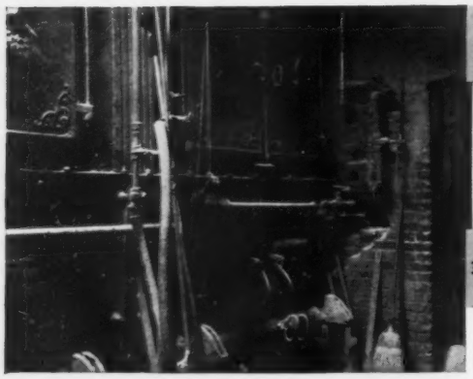
Laurel

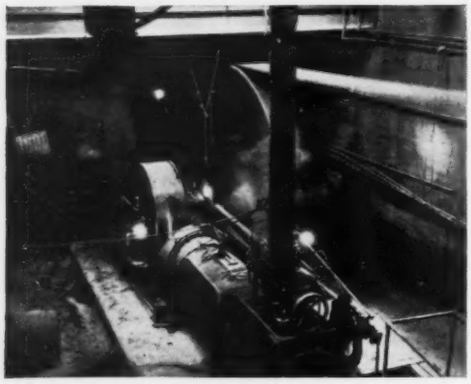
SOAP MANUFACTURING COMPANY, Inc.

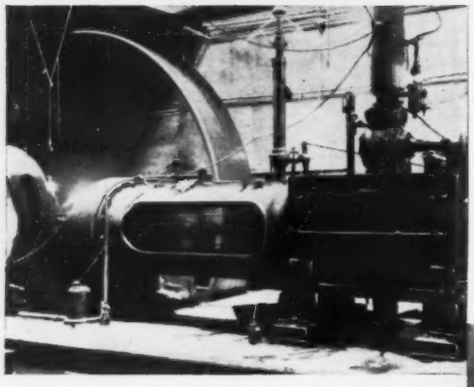
Wm. H. Bertolet's Sons — *Established 1909*

2606 East Tioga Street — Philadelphia, Pa.

Warehouses: Paterson, N. J. — Chattanooga, Tenn. — Charlotte, N. C.







Many power plants still look like this — imagine the efficiency!

Is Your Power Plant "1908" MODEL

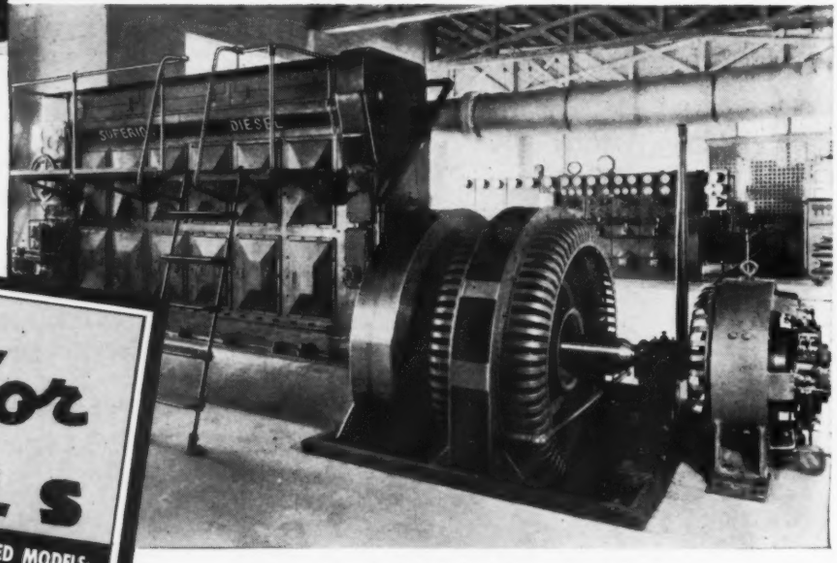
YOU may have invested in other improved equipment or processes . . . but have you done anything about your power plant upon which your entire production may depend? Too many power plants are still "1908 model"! Authorities know that antiquated, deficient power plant equipment wastes money every day!

How Antiquated Power Plants Cost You Money

Breakdowns are one way in which dollars slip away needlessly. It takes only one to cause serious loss in production. *Fuel waste* is another. A test any day would reveal power wasted away in heat which is not utilized as completely as possible.

Excessive maintenance and repair bills . . . slowing down of equipment by overloads or due to voltage drops . . . these are but two of many other ways in which antiquated power plants cost too much money.

Bring your power plant up to the highest standards of efficiency for 1938! Let us show you how Superior Diesels would fit such a program.



"1938 Model" with Superior Diesel

Superior DIESELS

HEAVY DUTY MODELS: 50 to 810 H.P., 250 to 720 R.P.M.

HIGH SPEED MODELS: 15 to 150 H.P., 900 to 1800 R.P.M.

THE NATIONAL SUPPLY COMPANY • SUPERIOR ENGINE DIVISION

FACTORIES: Springfield, Ohio; Philadelphia, Pa. · SALES OFFICES: Springfield, Ohio; Philadelphia, Pa.; New York, N. Y.; Los Angeles, Calif.; Houston, Texas.

AMERICAN KNITTING YARNS

HELP BUILD SALES_

In children's socks two things are important—*color* and *durability*. American Super-Mercerized Durene helps to solve both . . It will not dye-streak—and, being especially processed from the finest long staple cotton, insures extra wearing quality that brings repeat sales.

A trial will also demonstrate an unusually high performance in effecting production economies.

AMERICAN

YARN AND PROCESSING COMPANY

MOUNT HOLLY N. CAROLINA

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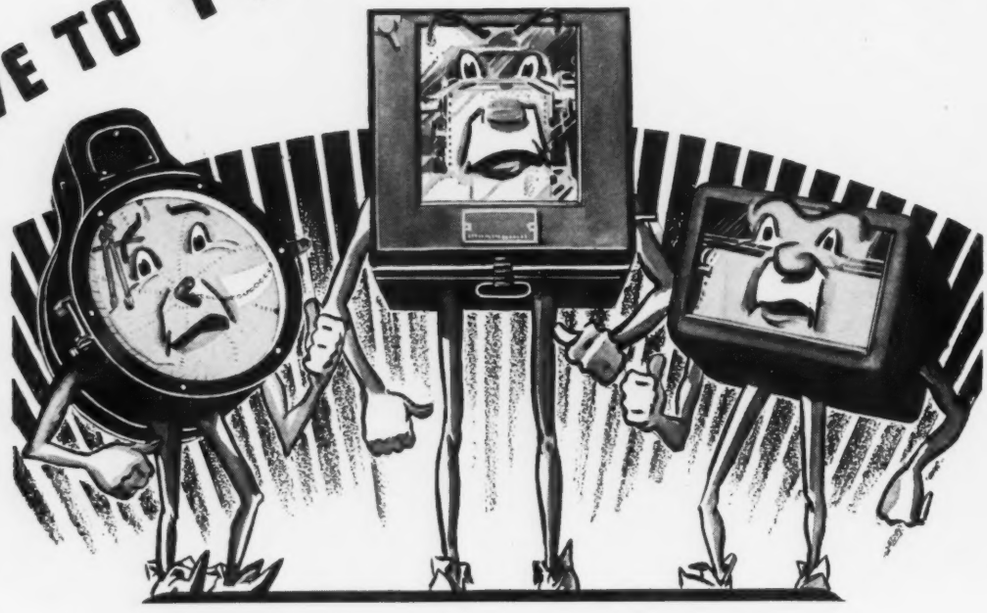
WE LOVE TO FIND FAULT!



That's why Westinghouse Mazda Lamps give MORE LIGHT—LONGER

Over 1,000 meters, gauges, scales and testers are used to inspect and test Westinghouse Mazda Lamps and the materials which go into their making. Their job is to find faults—which are few and far between because of the care and precision with which the lamps are made.

Take the torsion balance, for example. It checks the filament wire and is so sensitive that it can weigh down to 5 one-billionths of a pound.

Another gauge reads pressure to 30 one-billionths of an atmosphere. Then there's the balopticon machine which projects an image of each filament magnified 100 times on a ground glass screen. And when the filament wire is wound into spring-like coils, there's a microscope on each machine for minute inspection of the operation. Hundreds of these delicate checks and double checks enter into the manufacturing process to assure efficiency and precision in the final product.

When you buy a Westinghouse Mazda Lamp marked 60 watts, 120 volts, you can be certain that it will draw 60 watts at 120 volts—no more, no less. It has been thoroughly tested to make *sure* that it will give you more light, longer, for what you pay.

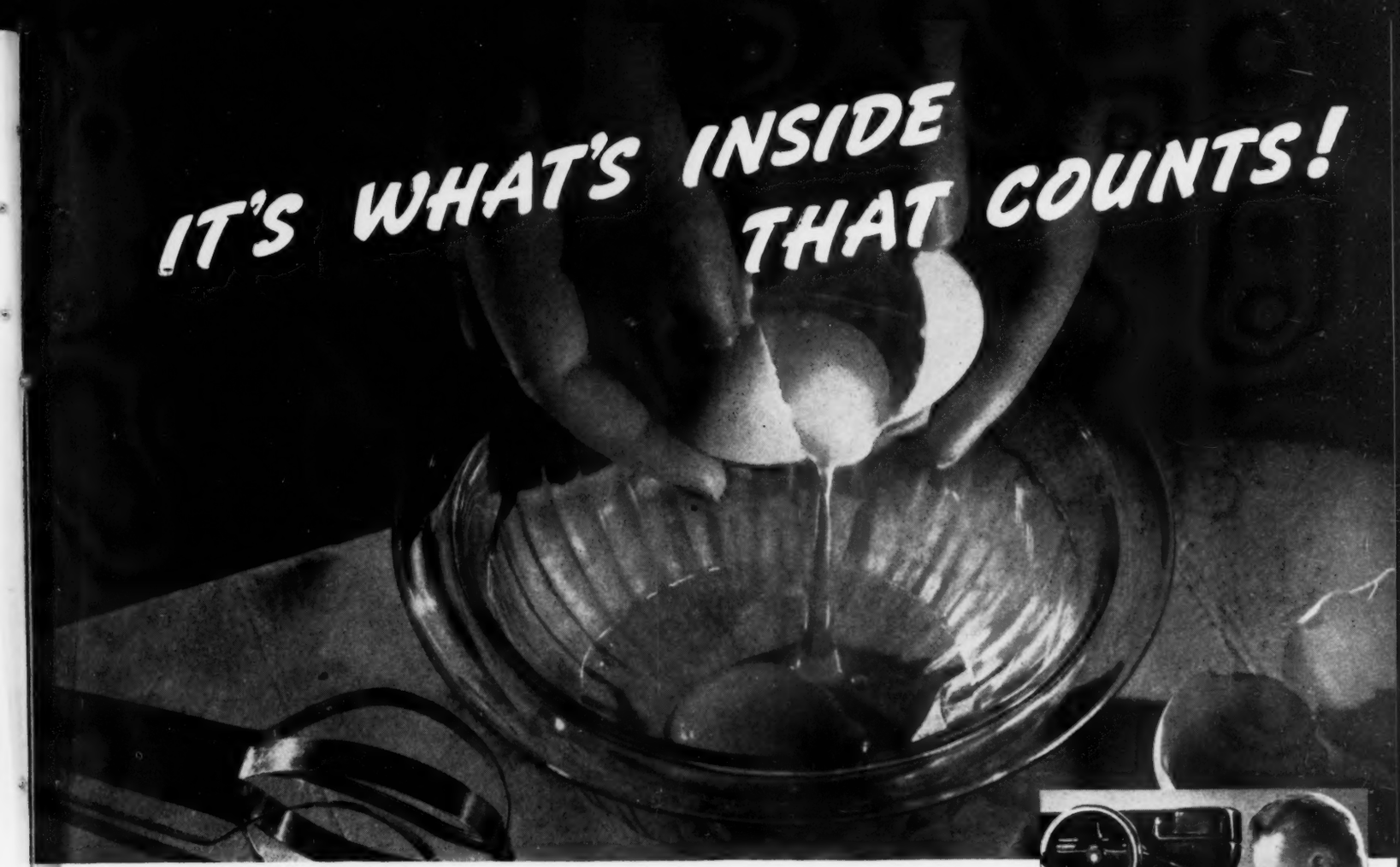
Over 480 tests and inspections of materials and processes go into the making of every Westinghouse Mazda Lamp. If any one of these tests or inspections were omitted, the quality of the lamp might be impaired. When you see the Westinghouse trade-mark on a Mazda lamp, you know that it is the best lamp science and engineering skill can make.

HOW TO JUDGE A LAMP

Lamps differ in quality. Inefficient lamps waste current and increase the cost of light. Our free booklet, *"How to Judge a Lamp,"* tells the important points to consider when buying lamps. Send for it today. Westinghouse Lamp Div., Westinghouse Elec. & Mfg. Co., 150 Broadway, New York, N. Y.

Westinghouse makes no compromise with quality

Westinghouse MAZDA LAMPS



—and that goes for

CRANE VALVES
for Textile Mill Service

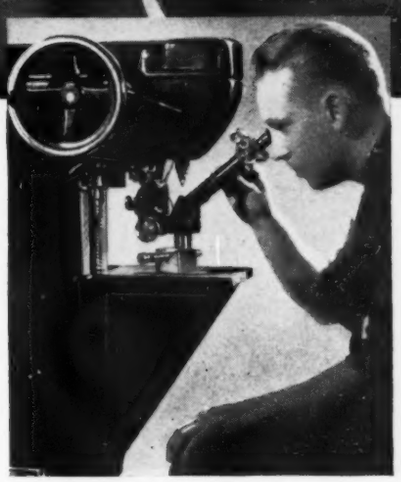
An egg may look fine, but it has to be good inside or its looks don't mean a thing. It's the same with valves. It's not the appearance, but the quality inside that tells the story of valve value in your plant. That is why Crane makes sure of uncommon quality* all the way through Crane valves by top-notch engineering, by precise laboratory control of raw materials, by modern production technique, and by the most complete and exacting system of checks and tests of products used in the industry. Install Crane valves and you'll soon see how the hidden quality in Crane valves counts in performance for you.

*If you want uncommon quality in valves of common use, look in the Crane No. 52 Catalog. In its 764 pages there are 38,000 piping items. Quick delivery is assured from a nearby stock. You will find Crane service, like Crane products, good all the way through.

CRANE

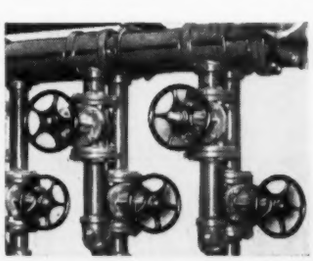
CRANE CO., GENERAL OFFICES:
836 SO. MICHIGAN AVENUE, CHICAGO

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS



WHEN DIAMONDS TELL A HARD STORY

Each metal in a Crane valve must have the right degree of hardness for the part which it plays. Above, you see a Crane Research Engineer using an instrument of foremost design and unquestionable accuracy, to measure the hardness of a valve stem to determine its bearing qualities. Thus, Crane in another way makes certain that what's inside counts.



WHERE THE LONG TEST BEGINS

Actual service is the surest test of valve quality. For three generations Crane has been building valves for the most exacting services, and this accumulated experience is the greatest aid to Crane engineers in making even the best valves a little better.

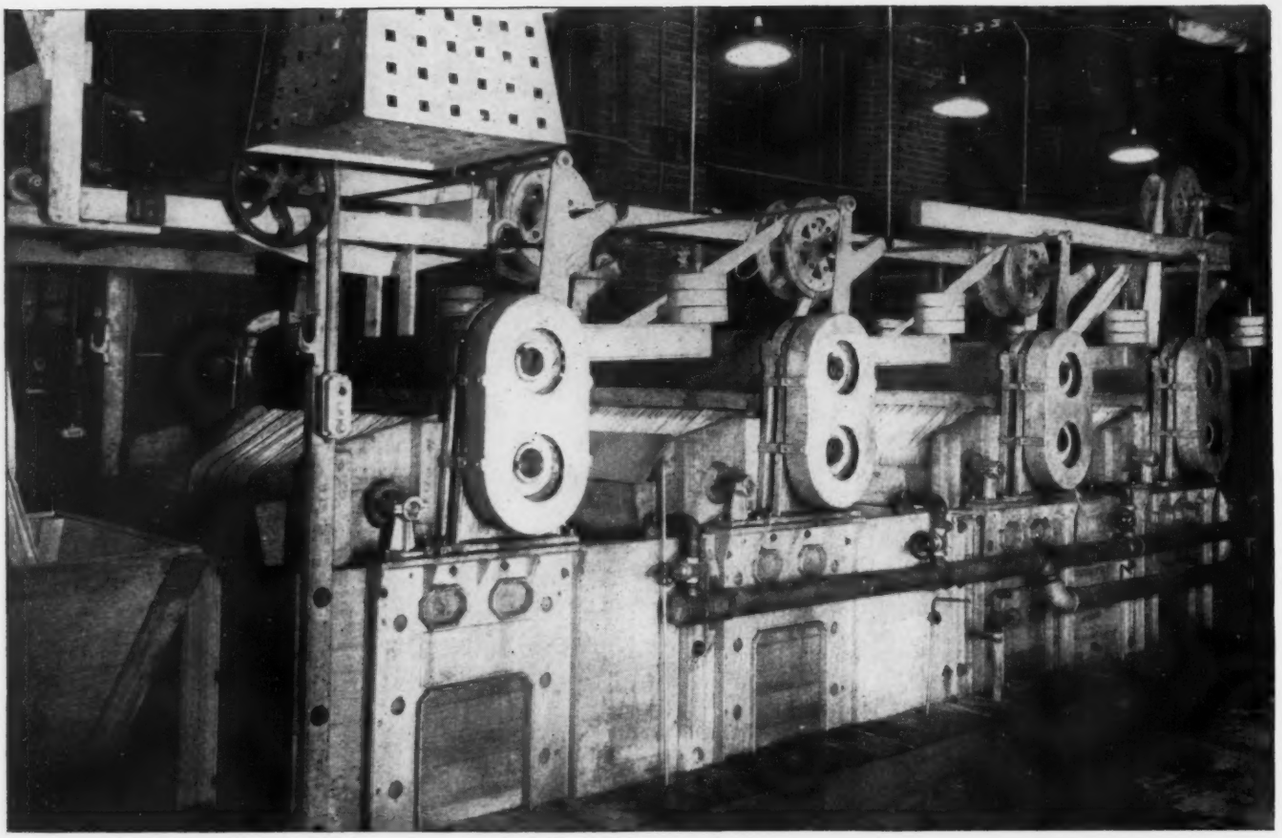
STANDARDS FOR "ROUGHNECKS"

A casting must meet the rigid Crane standards before finishing operations are started. Crane inspectors in the foundry caliper rough castings to make certain that body metal thickness is in accordance with the approved standards.

NO "PIGS IN A POKE"

Raw materials never enter into Crane manufacturing processes until their innermost nature has been disclosed and their quality is proved. Above, you see specimen drillings from pig iron starting on the journey through searching laboratory tests, typical of Crane control over raw materials.

NATION-WIDE SERVICE THROUGH 134 BRANCHES AND MORE THAN 500 WHOLESALERS



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Armour's CERTIFIED SOAP—a revolutionary, new, formulated, pre-tested, vegetable soap for the textile industry—has aroused unusual interest and comment—has delivered amazing results wherever used. • In worsted mills, silk throwster plants, hosiery mills, wool combing companies, yarn dyeing companies, it has won instant acceptance because its chemical make-up assures instant solubility, thorough cleansing and quick, easy rinsing. • Order a test barrel or bag of Armour's CERTIFIED SOAP today. Obtainable in Flakes, Bar and Solid form.

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From Portland, Maine, to Portland, Oregon,—there is a Fulton Sylphon sales-engineering agency in every principal city—specially trained to render prompt and helpful service, to insure the complete satisfaction of users of Sylphon Temperature Controls.

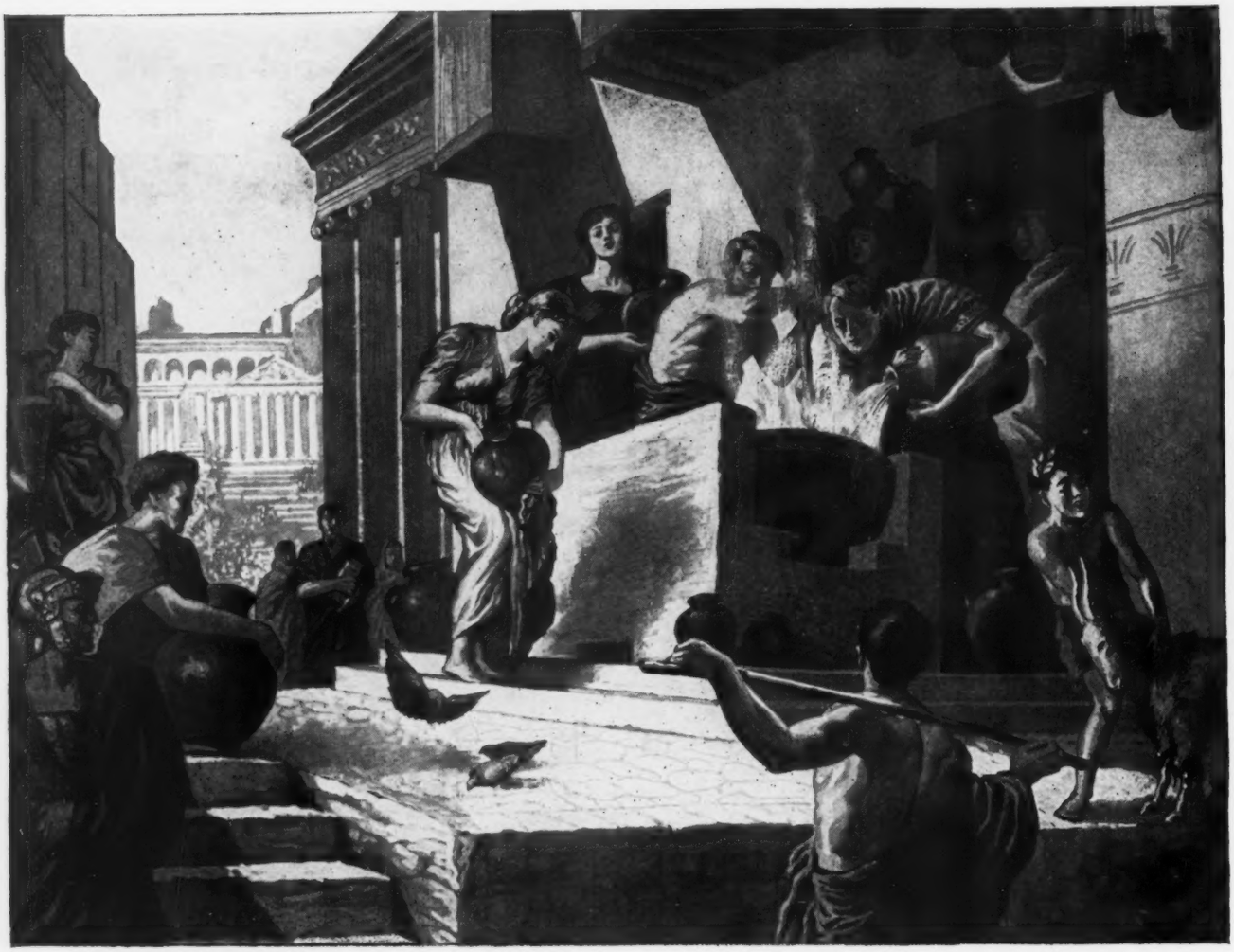
Whatever your control problem, pick up your telephone and call the representative nearest you.

We believe you will appreciate his conscientious, intelligent, practical help in the selection and application of the Sylphon Instruments that he knows will prove to be a cost-saving, profit-making investment. You will understand why the best products our 35 years of experience has taught us how to build—backed by this nation-wide field service—has been responsible for more than 250,000 highly successful Sylphon installations. Ask for Bulletin CT 50.

THE FULTON SYLPHON CO.
KNOXVILLE, TENNESSEE
Representatives in All Principal Cities in U. S. A. and in Montreal, Canada and London, England

SYLPHON Control

"POWERED BY THE TEMPERATURE IT REGULATES"



Through The Centuries With Alkalies

Just as the Romans led the way in their day to new achievements in the arts and sciences, so THE COLUMBIA ALKALI CORPORATION sets new standards of product refinement and service. With the most modern production facilities, conveniently located for prompt deliveries to consuming outlets . . . with a technical staff alert to capture new refinements in product and application for the benefit of its customers . . . with conveniently located branch offices and warehouses . . . COLUMBIA stands in the forefront as a leader and as a servant of industry.

In the days of Julius Caesar soda was mixed with goats' tallow to make soap. Pliny speaks of two kinds • hard soap and soft soap • as used by the Germans. He says it was originally a Gallic invention for giving the hair a bright hue. The Romans developed soap-making to a fine art through the skillful blending of alkalies and fatty acids, and they used soap as a medicinal as well as a cleansing agent.

COLUMBIA

SODA ASH
CAUSTIC SODA
SODIUM BICARBONATE
MODIFIED SODAS
LIQUID CHLORINE
CALCIUM CHLORIDE

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COMPACT

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Among Grinnell's advanced plant facilities are these exclusive nozzle extruding machines, making possible welded outlets of the strongest, simplest type.

This compact, orderly, low pressure installation can best be made by prefabrication. And by specifying Grinnell Prefabrication, engineers who designed it got other advantages, too . . . note that all 90° outlets are Grinnell extruded type with welding neck flanges . . . all welds are plain circumferential butt welds * * High or low pressure, power or process piping, there's one sure way to get advanced plant facilities . . . knowledge of today's conditions . . . delivery on schedule . . . thorough pretesting to qualify for insurance . . . while the installation is still on paper, *give the plans to Grinnell.* Grinnell Company, Inc., Executive Offices, Providence, R. I., Branch offices in principal cities.

PREFABRICATION BY GRINNELL

WHENEVER PIPING IS INVOLVED

MEASURING

FIVE BILLIONTHS OF A GRAM

Speaking of "important trifles," there is no better example than those impurities in caustic soda which make so much trouble in rayon manufacture. For of all processing and manufacturing operations, rayon manufacture is probably the one in which alkali impurities get—and deserve—the most attention.

It is a significant fact, therefore, that Mathieson Caustic Soda sets the standard for purity in the rayon industry. It is equally significant that Mathieson should be the first to develop a practical method for quantitative spectrographic analysis of caustic soda.

By using spectrographic equipment, Mathieson has reduced the time required for quantitative analysis to a fraction of that previously required. Even more important, the accuracy of the results obtained has been increased to a point where impurities present in amounts as low as 1/100,000th of 1% (actually about 5 billionths of a gram) can be closely determined.

With this greater speed and increased accuracy, Mathieson is able to control the purity and uniformity of its caustic soda more closely than ever before. In addition, the company's technical and spectrographic staffs are in position to render valuable service to users of caustic in establishing their own spectrochemical laboratories and procedures.

Chemical buyers interested in knowing more of the part Mathieson has played in the development of the alkali industry will want to own a copy of "Mathieson Chemicals," a 36-page booklet outlining the company's history and describing its various products. Write for your copy today to The Mathieson Alkali Works (Inc.), 60 East 42nd Street, New York, N. Y.

Mathieson Chemicals

SODA ASH . . . CAUSTIC SODA . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . HTH AND HTH-15 . . . AMMONIA, ANHYDROUS AND AQUA . . . PH-PLUS (FUSED ALKALI) SULPHUR CHLORIDE . . . CCH (INDUSTRIAL HYPOCHLORITE) . . . DRY ICE (CARBON DIOXIDE ICE) ANALYTICAL SODIUM CHLORITE